EGYPT OIL&GAS NEWSPAPER

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THE NEW AGE OF ZOHR

MEDITERRANEAN DILEMMA OF LNG BUNKERING

MARITIME BORDERS IN THE EASTERN MEDITERRANEAN

EXPLORE OR IGNORE? EGYPT'S WESTERN MEDITERRANEAN

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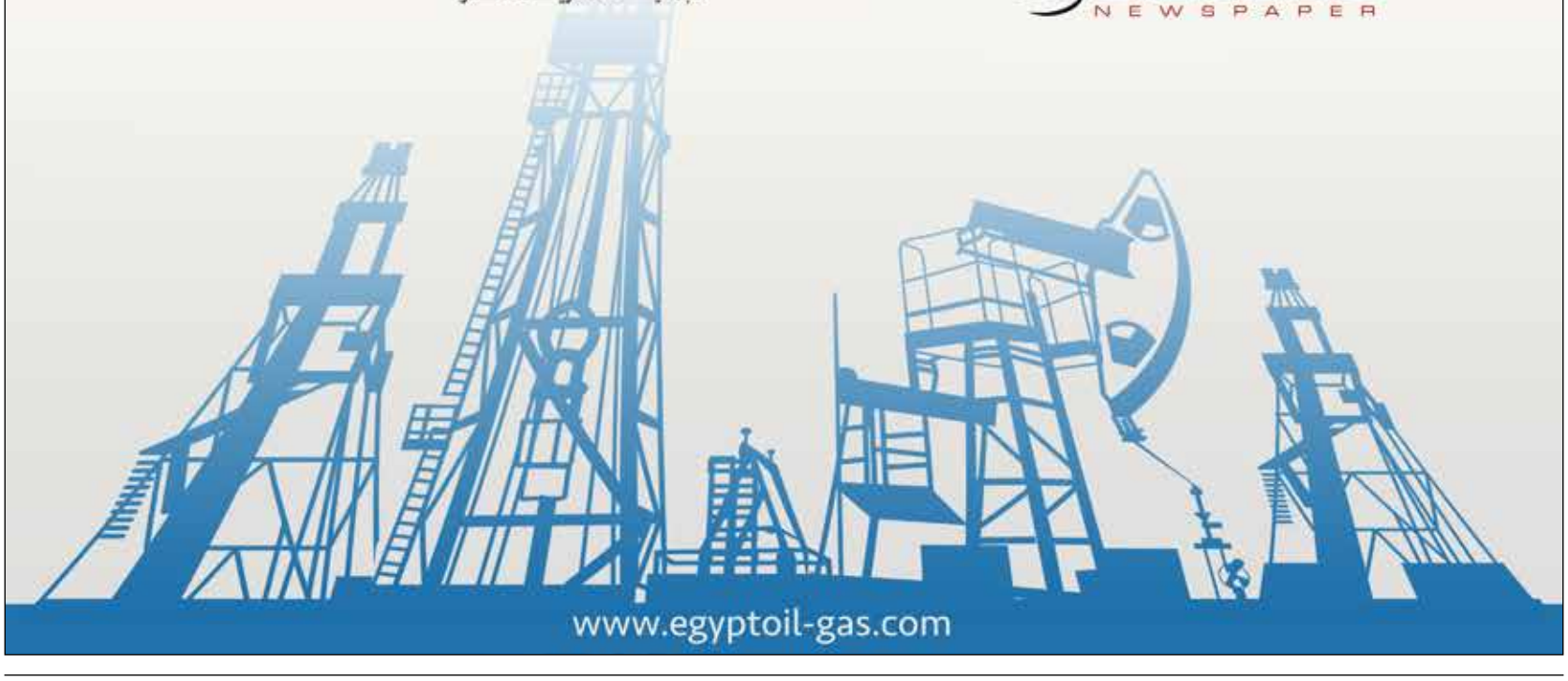

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EDITOR'S NOTE

The Mediterranean Sea has undoubtedly become a key meeting point for major oil and gas investors in the past several years. An opportunity to enhance business partnership, to expand exploration and production deals, and to exchange experience and knowledge is needed more than ever before. The long awaited Mediterranean Offshore Conference (MOC) is here.

In this issue, the EOG team has examined multiple aspects that frame the oil and gas industry in the Mediterranean region. Egypt's strong desire to become an energy hub calls for opportunities such as MOC to enhance country's regional position, for which it fully qualifies thanks to the gigantic Zohr gas field discovery. Not surprisingly, the gas find has made the eastern Mediterranean attractive to foreign investors even though they continue ever so feverishly cutting their capital spending and exploration costs, while blaming the oil price slump for the unpleasant effect.

Turning our sight to Egypt's western offshore areas in the Mediterranean Sea, we studied exploration performance of international companies in this area. Although each of them has had different success in digging into the Mediterranean bedrock, experts seem to stand united in their belief that Egypt's northwestern offshore region has a lot to offer. Despite extremely deep waters exploration challenges, this territory is predicted to become a future hydrocarbon motherlode.

A key dilemma for Mediterranean offshore explorations remains the maritime borders disputes. In this issue, we analyze relations among the countries of the eastern Mediterranean to show how geopolitics continues impacting on the future of offshore gas industry. Strong voices that are being heard advocating for multilateral collaboration as opposed to escalation of already contentious relations among regional countries, are thus helping to pave a new path towards a better economic prospect in the part of the world.

We also focused on the indispensable role of transportation in the Mediterranean. As Greenhouse Gas Emissions (GHGs) remain in the spotlight, the use of oil as a marine fuel for tankers and ships could be slowly coming to an end, shaping new times for liquefied natural gas. LNG bunkering conundrum in the region is out there to be addressed. Replacing residual fuel in favor of LNG may present new challenges as well as new opportunities.

On a personal note, as this is my first issue as Editor in Chief for Egypt Oil and Gas, I must express my gratitude to the entire EOG team for having entrusted me with this role and given me all the support throughout the past weeks. My special thanks go to Amanda and Basma for their tremendous help.

We all hope that you will enjoy reading the magazine as much as we did preparing it for you.

Thank you for your support and readership.

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Refining In Environmentally Friendly Way

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EGYPT OIL&GAS NEWSPAPER

Eni Flows Gas at Zohr 2X, Plans Stakes Sale

Italy-based Eni has announced that its Zohr 2X appraisal well in the Shorouk block offshore Egypt has delivered up to 44mscf/d of gas during production tests, Offshore Technology informed. At the time of performing tests, 120m of the reservoir was opened to production.

Following collection and evaluation of the comprehensive set of data it was proved that the well has a good production capacity estimated in a deliverability of up to 250mscfd in production configuration.

Eni has further plans to drill another three further wells on the Zohr field in the Mediterranean Sea in 2016, wroteWorld Oil. Operations will be performed by Petrobel, a joint venture between Eni's subsidiary International Egyptian Oil Company (IEOC) and the state partner Egyptian General Petroleum (EGPC).

Works on the onshore gas treatment plant construction have already started, with bids for the offshore activities launched and close to completion, according to Rigzone.

In February 2016, Eni completed the authorization process for development of Zohr natural gas field, which is estimated to hold up to 30tcf of gas. The Zohr field lies in an area of 100km^2 and in water depths of 1,450m.

In March, Egypt's Minister of Petroleum and Mineral Resources, Engineer Tarek El Molla, met with the Egyptian General Petroleum Corporation (EGPC), the Egyptian Natural Gas Holding Company (EGAS), Petrobel, and Italy's Eni to discuss recent developments of the Zohr gas field project, the Oil Ministry informed in a press release.

The minister reviewed updates regarding the first phase of the project, the progress of drilling activities in the Shorouk concession area, the positive results of drilling the Zohr-1 and the Zohr-2 wells, and reaching the gas-bearing layer, as well as the Zohr-3 well drilling by Saipem, which started in mid-March.

The Italian company has further plans to drill three other wells on the Zohr field in 2016, wrote World Oil. However, according to Eni's recently published business plan for 2016-2019, the company envisions to cut investments and sell down stakes in giant oil and gas fields in Egypt and Mozambique to help it prop up dividends. The state-controlled company said it would cut overall group capital spending by 21% and exploration budgets by 18%, while raising $7.9b from asset sales. It also plans $6.7b in cost cuts, more than 50% of which is expected to come from renegotiating contracts, Reuters reported.

Egypt Delivers Natural Gas to Upper Egypt

Egypt's Minister of Petroleum, Tarek El Molla, said that natural gas has been delivered to 621,000 housing units in Upper Egypt since the launch of the Household Natural Gas Connection National Project. The project aims at delivering gas across the country.

Five companies are currently carrying out the delivery projects in the governorates of Upper Egypt to speed up the completion of the program. Natural gas delivery to Upper Egypt is considered one of the most strategic projects aimed at establishing modern urban and industrial communities and improving citizens' standard of living.

El Molla added that he was closely following the project's timeline and facilitating any difficulties in its path. The project aims to introduce a clean source of energy, rationalize the use of petroleum products, and reduce butane gas subsidies.

In previous statements, state-owned Egyptian Natural Gas Holding Company (EGAS) announced that it had planned to connect 1.2m homes in Egypt to natural gas by the end of June 2016, according to Al Bawaba. Egypt has already delivered natural gas to 850,000 homes in the fiscal year 2014-15.

It is expected that additional 193,000 housing units and more than 1,600 industrial and commercial entities in Upper Egypt will receive natural gas within the current fiscal year 2015-16, according to EGAS Chairman, Khaled Abdel Badie, as Zawya wrote.

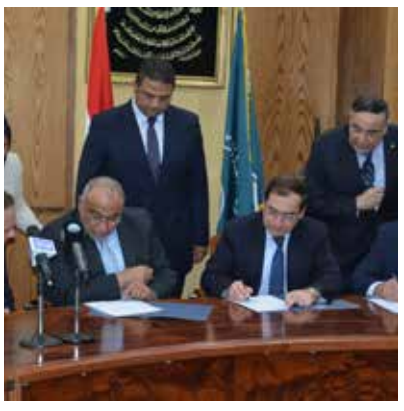
Egypt, Jordan, Iraq Revive Basra-Aqaba Oil, Gas Pipeline Project

Egypt's Ministry of Petroleum is seeking to expand its foreign activities through oil and gas production in Iraq, Al Borsa reported. Egyptian public sector companies such as Petrojet and ENPPI will complete work in the country in exchange for shares in production projects.

Mohamed El Masry, the Head of the Egyptian General Petroleum Corporation (EGPC), said that Egypt had a plan to participate in several projects with Iraq in the fields of crude oil refining, production, and imports.

Negotiations are also underway to import volumes of crude oil from Basra, refine it in Egyptian refineries, and distribute its derivatives of petroleum products in the domestic market or export excess products.

Egyptian, Jordanian, and Iraqi Oil Ministers affirmed their countries' commitments to pursue oil- and gas-related projects that had been previously agreed through a Memorandum of Understanding (MoU) signed in mid-November 2015,



Egypt's government informed in a statement, following trilateral talks held in Cairo.

According to MoU, the development of the Jordanian-Iraqi 'Basra-Aqaba oil pipeline project' and a parallel gas pipeline, constitute an ambitious project for its role in achieving integration and enhancing energy security between the two countries, the statement said.

SDX Begins Seismic Program on Egypt's South Disouq Asset

UK-based exploration and production company, SDX Energy Inc., has announced the start of work on the seismic acquisition of 300 sq km of 3D data on the South Disouq concession, located onshore Nile Delta Egypt, Oil Voice reported. The seismic acquisition program, whose contract was signed in November 2015, is expected to take approximately three months after which a 3-4-month period of processing and interpretation will be undertaken. The data obtained through this program will be used to determine the prospectivity on the block followed by the selection of a location for a high impact exploration well forecast to be drilled in Q4 2016, CNW wrote.

OneSubsea Wins Contract for BP's West Nile Delta Fields

OneSubsea, a Cameron and Schlumberger company, has been awarded a contract from BP Exploration Ltd. and partner Deutsche Erdoel AG (DEA) to supply subsea production systems for West Nile Delta fields – Giza, Fayoum, and Raven – situated offshore Egypt, informed World Oil.

Giza and Fayoum will be tied-back to modified onshore Rosetta facilities and integrated with a new onshore plant for Raven. For the long-distance gas fields, OneSubsea will deliver large-bore subsea trees, manifold systems incorporating high-integrity pressure protection systems (HIPPS), according to Offshore Technology. In addition, the company will supply connection systems and controls systems, along with project engineering, management, and testing.

Egypt, EBRD Developing a New Cooperation Strategy

Egypt's International Cooperation Minister, Sahar Nasr, received European Bank for Reconstruction and Development's (EBRD) Director for Egypt, Philip ter Woort, to discuss preparations of a new cooperation strategy for the coming years.

Development of the new strategy comes in light of the EBRD Board of Governors' decision on 30th October to make Egypt a country of operations, meaning that all EBRD investments in the country will be financed from the ordinary capital resources of the Bank.

During the meeting, Nasr said the new strategy should incorporate Egyptian government's priorities at present mainly mega national projects that would offer more job opportunities and help improve living conditions. She added that the private sector has to be given special care as a large contributor to pushing forward development efforts in the coming period.

Egypt is currently giving priority to new and renewable energy projects, she said, calling on EBRD to put new-energy projects on top of its strategy in Egypt with a special focus on solar energy stations.

For his part, ter Woort said that the Bank will be offering funds needed for solar-energy-generating stations whether built by the public or private sectors.

EBRD also aims to combat energy waste in Egypt linked to gas flaring in the country's petroleum industry, EBRD informed Egypt Oil&Gas in a press release.

Around 140bcm of associated petroleum gas (APG) are flared annually throughout the world as part of the petroleum production process, wasting large amounts of energy resources, and contributing to pollution, Associate Director of EBRD, Cristian Corraretto, stated at the EBRD recent workshop, held on 15th March in Cairo.

The Bank stated that Egypt ranks among the 20 top gas-flaring countries in the world. During the workshop, the EBRD discussed the findings of its study on "Gas Flaring Reduction in Egypt," Egypt Oil&Gas reported.

Workshop discussions, attended by Khaled Abdel Badie, Chairman of EGAS, as well as experts from state and private oil and gas companies, focused on the new technologies, business approaches, legal frameworks, and regulations that can reduce gas flaring, with a proposed target of zero gas flaring by 2030.

Egypt Secures $17.7b in Japanese Funding

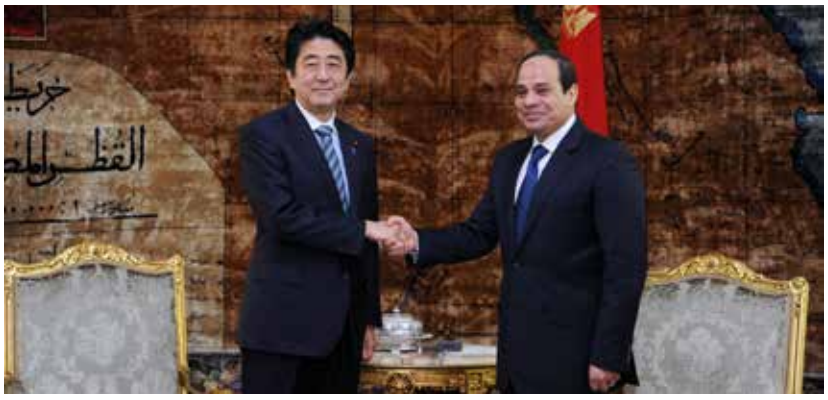
Egypt's President Abdel Fattah Al-Sisi held meetings with Japanese Prime Minister, Shinzo Abe, during his March state visit to Tokyo in attempt to boost mutual cooperation in the energy, education, and development sectors, the government informed in a press release.

The leaders reached an agreement according to which Japanese companies are set to take part in Egyptian projects worth about $17.7b in the electricity and other sectors, Al Bawaba informed. In addition, Japanese and Egyptian companies are scheduled to sign more than 10 memorandums of agreement.

In addition, Egypt was to sign three concessional loan agreements with Japan and one with South Korea worth a total of $575m to finance projects in energy and transportation, Al Bawaba wrote.

Japan's lending package includes $305m to boost the capacity of three state-owned electricity distribution companies and cover the costs for the construction of a 20MW photovoltaic station in the coastal city of Hurghada on the Red Sea

The loans will be at interest rates of less than 1%, expected to be repaid over a period of 50 years, including a 10-year grace period, according to Trade Arabia.



Egypt Reduces Natural Gas Prices to Steel, Iron Factories

Egypt will reduce the price of natural gas to steel and iron factories to $4.5 per 1m thermal units from the current $7, Industry Minister, Tarek Kabil, informed, according to Reuters. The new reduced price will be offered only to those factories that currently operate at full capacity, Kabil added. The reduction brings gas prices for the industries back to their 2014 levels, before prices were hiked by 30%-75% as part of a broader government plan to cut subsidies, including those to heavy industry. High gas prices have led to factories operating at only 20% of their production capacity.

EGPC: Egypt Aims to Achieve Fuel Self-Sufficiency by 2020

The Egyptian General Petroleum Corporation's (EGPC) Vice Executive Chairman for Operations, Engineer Amr Mostafa, said that the petroleum sector had managed to meet all of the consumer and industrial needs of petroleum products in 2015, even though the consumption rate continued to rise, Al Borsa reported. He added that there is a plan to achieve Egypt's fuel self-sufficiency by 2020 and to export excess fuel. He added that Egypt produces about 85% of its gasoline consumption, 50% of butane gas, 65% of diesel fuel, and approximately 75% of fuel oil.

EU: Egypt Is on Right Path in Renewable Energy Development

Egypt is on the right path to development as the government is adopting several encouraging and successful policies, especially in the energy sector, Head of the European Union Delegation to Egypt, James Moran, told All Africa.

The European Union is providing Egypt with one of its largest grant programs of more than $1b to support the renewable energy sector in the country, Moran added, speaking at the convention on renewable energy organized by the EU in the Egyptian city of Matrouh.

Currently, the EU grant scheme is, however, facing a challenge in attracting private sector investments. According to Moran, Egypt's geographical location and atmosphere highly qualify the country to become an important center for renewable energy production.

The EU is in support of Egypt's policies on the energy file, including a decision to lift fuel subsidy and turn to renewable energy. According to EU Delegation Head, despite the availability of natural gas, the country necessitates new energy sources due to the high population density.

Among other energy programs, the EU is contributing to landmine clearing in Matrouh on an area covering 200,000 feddans, out of which 12,000 have been cleared as the three-year project started in 2014 under a $4.4m grant.

Apache, Shell Target Unconventional Gas Production

Apache and Royal Dutch Shell plan to start producing unconventional gas from their joint venture in Egypt's Western Desert by the end of June 2016, in spite of the fact that Apache is cutting investment in the nation because of the falling oil prices.

Works on the country's first unconventional gas well was set to start by the end of March and both companies will drill two additional wells before talking with the government about full development of the field by horizontal drilling and fracking, Apache Egypt Regional Vice President and General Manager, Thomas Maher, said in an interview with Bloomberg.

Shell is the operator in this unconventional gas pilot project with a 52% interest, while Apache owns the remaining 48%. The operation lies within Egypt's Northeast Abu Gharadig licensing area, in which the two companies together own a 50% stake and state-run Egyptian General Petroleum holds the rest, Seeking Alpha wrote.

Apache, one of the world's leading independent energy companies engaged in the exploration, development and production of natural gas, crude oil and natural gas liquids is targeting for production to remain unchanged despite reduced investments. The Texas-based corporation sold 33% of its Egyptian business in 2013 to China Petroleum and Sinopec, with their production in the country now at 353,000boe/d, mostly in the Western Desert. The company plans to invest about $1b in the nation, down 35% in each of the past two years, because of lower oil prices, Maher said.

In 2013, the US Energy Information Administration (EIA) re-evaluated Egypt's potential and determined it to be 535tcf of shale in place, 100tcf of which was deemed technically recoverable, and over 114b barrels of shale oil in-place.

Egypt is seeking new investments in natural gas to help alleviate country's energy shortage that led to lower production at factories last summer. It also aims at reducing bills for imported liquefied natural gas.

While before 2011 the country had sufficient supplies to ship gas by pipeline to Jordan and Israel, currently there are plans to boost gas import from Iraq via Jordan through an existing link, the Egyptian Oil Ministry stated.

Egypt's Maridive Signs $43m Offshore Contract in UAE

Egyptian Maridive & Oil Services SAE company announced that its offshore construction sector obtained a new contract worth $43m in the UAE, according to a statement released in early March, Daily News Egypt reported. The contract entails that Maridive's subsidiary, Valentine Maritime, will supply and implement various offshore constructions in the Emirates. According to Construction Week Online, Maridive said in January that its backlog of contracts between 2016 and 2019 amounts to $337m. "The execution of the contract will start at the end of the second quarter of 2016, to be finished by the end of the last quarter," the company said in a statement.

Egypt's Petroleum Marine Services Co. Wins Four Developmental Projects

Egypt-based Petroleum Marine Services Company (PMS) has won four large developmental projects of Amal C for PICO International Petroleum, Egypt's largest private sector oil and gas company, informed Amwal Al Ghad. The projects also include the expansion of the third basin in Ain Sukhna port for Armed Forces Engineering Authority, the establishment of shipping services for the Egyptian Propylene and Polypropylene Company (EPPC), and the development of HH and NAO fields of the General Petroleum Company (GPC). In addition, the company has signed agreement with Saipem to lay pipelines for developing the newly-discovered Zohr giant gas field, according to PMS' Chairman, El-Sayed El-Badawi.

DRILLING

QARUN

QARUN, a joint venture between EGPC and Apache, has completed drilling new oil development wells in its concession area in the Western Desert. In February 2016, the production rate of QARUN was 1,085,481 barrels of oil.

EBS-10(ST)

The well was drilled at a depth of 8,080ft utilizing the EDC-63 rig. Investments surrounding the project are estimated at $900,000.

ED-57

The well was drilled at a depth of 6,270ft utilizing the EDC-64 rig. Investments surrounding the project are estimated at $700,000.

SAMRA-81

The well was drilled at a depth of 5,820ft utilizing the EDC-63 rig. Investments surrounding the project are estimated at $1m.

PETROSILAH

PETROSILAH, a joint venture between EGPC and MERLON, has completed drilling a new oil exploration well in its concession area in the Western Desert. In February 2016, the production rate of PETROSILAH was 319,592 barrels of oil.

WARD 1-3

The well was drilled at a depth of 9,000ft utilizing the TANMIA-1 rig. Investments surrounding the project are estimated at $1.868m.

KHALDA

KHALDA, a joint venture between EGPC and Apache, has completed drilling new oil exploration and development wells in its concession area in the Western Desert. In February 2016, the production rate of KHALDA was 4,354,315 barrels of oil.

WKAL A-15

The well was drilled at a depth of 13,162ft utilizing the EDC-54 rig. Investments surrounding the project are estimated at $2.450m.

UMB-234

The development well was drilled at a depth of 12,200ft utilizing the EDC-40 rig. Investments surrounding the project are estimated to be $1.042m.

AG-131X

The exploration well was drilled at a depth of 13,174ft utilizing the EDC-1 rig. Investments surrounding the project are estimated to be $2.197m.

WKAL A-14

The development well was drilled at a depth of 13,503ft utilizing the EDC-54 rig. Investments surrounding the project are estimated to be $1.832m.

SIWA-3R-9

The development well was drilled at a depth of 14,805ft utilizing the EDC-16 rig. Investments surrounding the project are estimated at $2.398m.

PETROBEL

PETROBEL, a joint venture between EGPC and ENI, has recently completed drilling new oil development wells in its concession area in Sinai. The production rate of PETROBEL was 2,784,456 barrels of oil in February 2016.

ARM W-6H

The well was drilled at a depth of 12,192ft utilizing the WF-797 rig. Investments surrounding the project are estimated at $6.851m. It is worth noting that the well is being placed on production.

SIDRI-20

The well was drilled at a depth of 11,096ft utilizing the ST-12 rig. Investments surrounding the project are estimated at $4.278m. It is worth noting that the well is being placed on production.

GPC

GPC, a public sector company, has completed drilling new crude oil development wells in its concession area in the Eastern Desert. The production rate of GPC in February 2016 was 1,188,370 barrels of oil.

BAKR-128

The well was drilled at a depth of 4,346ft utilizing the ST- 9 rig. Investments surrounding the project are estimated at $1.2m.

ALHAMD-3 ST-2

The well was drilled at a depth of 4,347ft utilizing the ADMRIN-6 rig. Investments surrounding the project are estimated at $1.3m.

Global Oil Producers to Debate Oil Output Freeze

OPEC and non-OPEC producers – Qatar, Saudi Arabia, Russia, and Venezuela – are expected to hold a meeting in the Qatari capital on April 17th to debate oil output freeze on the January 2016 levels. The meeting is a follow-up on previous negotiations held in February. The involved countries intend to call on other producers to follow suit.

Qatari Energy Minister, Mohammed Bin Saleh Al-Sada, who is also the current OPEC President, said that to date, around 15 OPEC and non-OPEC producers, accounting for about 73% of global oil output, are supporting the initiative, Reuters reported.

In the wake of the initiative, Iran has said it would not participate in any accord until it has restored its position in the market and regained its lost shares. Tehran is therefore currently seeking to increase its crude production after the end of economic sanctions.

Nevertheless, the fact that the meeting would go ahead without Iran indicates a shift in the stance of Gulf oil exporters including Saudi Arabia, who had previously maintained that all major producers should participate in any agreement, wrote Reuters in another report. Iran's refusal to take part in the output freeze is "a setback but it will not necessarily change the positive atmosphere that has already started," said an OPEC source from a major producer.

Meanwhile, Azeri Deputy Oil Minister, Natiq Abbasov, also announced that Azerbaijan had no plans to freeze its oil production.

There are doubts if the planned freeze could radically alter the global oil market as severe competition for market shares is ongoing, and has caused stockpiles to rise to record levels. A freeze in output is, nonetheless, believed to put an end to adding to the excess supply that has caused prices to collapse to record low, from levels above $100 a barrel seen in June 2014.

OPEC delegates have said that further action including a supply cut could follow by the end of the year, depending on Russia's commitment to the freeze and how much oil Iran adds to the market.

It is, however, unclear which of 13 OPEC members and non-OPEC oil producers will attend the talks. Kuwait and the United Arab Emirates have said they would commit to the freeze if other major producers also participated.

Saudi Aramco Plans to Double Gas Production in 10 Years

Saudi Aramco, the world's largest oil and gas company, plans to nearly double its gas production to 23bscf/d in the next 10 years, according to its CEO Amin Nasser. The Saudi company also plans to raise its refining capacity between 8mb/d to 10mb/d, up from its current capacity of around 5.4mb/d, Rigzone informed.

"The Kingdom has managed to increase gas production from 3.5bscf/d in 1982 to more than 12bscf/d now and this figure is expected to double to around 23bscf/d during the coming decade," said Aramco CEO, The Wall Street Journal reported.

In addition, Aramco CEO also stated that the company was moving ahead with its strategy "to achieve a better balance between the total exploration and production capacity, which stands at 12mb/d of crude oil."

In attempt to embark on a massive program to boost gas output for electricity and petrochemical production by developing gas fields not associated with oil production, Aramco is exploring and developing unconventional gas in the north of the Saudi Kingdom, wrote Arabian Business.

It was also reported by Reuters that Saudi Aramco will continue to invest in upstream and downstream sectors, expecting an upwards adjustment in oil prices to begin by the end of 2016.

Algeria's Sonatrach to Invest $3.2b to Increase Pipeline Capacity

Algerian state-run energy company Sonatrach will invest $3.2b over four years, including $530m in 2016, to increase its pipeline capacity as natural gas output rises from new and existing fields, a top company official said, Reuters reported.

The additional transport capacity aims to deliver larger volumes of gas as new fields in southeast and southwest are expected to add more output soon. The company stated that its goal is to guarantee increased supplies to European clients, however, no further specifics on the amounts or timeline were given.

Meanwhile, as Algeria had been hit hard by a 70% fall in oil prices since mid-2014, its revenue from energy fell by 50% last year and it has been struggling to attract foreign oil companies in recent energy bid rounds.

The government is, however, determined to increase oil and gas production to keep up exports and meet growing local demand. It has targeted increased output from new and existing fields and expects to start producing from seven fields between now and 2018, according to the Energy Information Agency, wrote The Oil and Gas Year.

This includes the expansion of the Southern Fields project on the giant

In Salah venture, operated by a joint venture between Sonatrach, BP, and Statoil, which was signed off by the government in February 2016.

Eni Opens Three New Plants in Iraq's Zubair Field

Italian energy company Eni has opened three new plants for oil, gas, and water treatment in the Zubair oil and gas field in Southern Iraq. The new plants in combination with the existing ones will help to increase the oil and gas treatment capacity to an overall level of 650,000b/d, Hydrocarbons Technology reported. The southern Iraqi plants are located in the area of Hammar – with a total capacity of 200,000b/d, and of Zubair and Rafydia – each with a capacity of 50,000b/d, Europa Wire informed. Hammar and Zubair oil fields have already started production as well as exports, whereas Rafydia was to launch activities by the end of March. The current production of the Zubair field is around 360,000b/d and the plan is to achieve 850,000b/d over the next few years.

Israeli-Jordanian Gas Pipeline to Come Online in 2017

An Israeli-Jordanian pipeline will start supplying natural gas from the Israeli Tamar offshore field to Jordan in 2017 for an initial term of 10 years, The Jerusalem Post reported. The pipeline, currently being constructed in the Sdom area by the Dead Sea, will supply 1.8bcm of gas to Jordanian private customers, according to a letter of intent signed between Tamar partners in February, wrote i24News. A second pipeline, which is due to be built in the Beit Shean area, will supply gas from the Leviathan offshore reservoir to the Jordanian National Electric Power Company (NEPCO) by the end of 2019. The Israeli-Jordanian cooperation comes in the framework of a gas deal signed in September 2014, under which Israel will supply Jordan with $15b worth of natural gas in total.

Libya Witnessed Militants' Attack on Sarir Oil Field

Suspected Islamic State (IS) militants staged an attack on a power and water plant about 80km from the major Sarir oil field in eastern Libya in a month-long series of assaults on the country's energy infrastructure, Reuters reported. Any threat to the Sarir area cause particular alarm because more than 50% of Libya's remaining oil production comes from this territory.

Security forces foiled an attempted suicide car bombing by killing the driver, before engaging the attackers in clashes, a guard explained. No group immediately claimed responsibility for the attack, but IS fighters have previously targeted oil installations in Libya, stepping up their campaign against export terminals in the east of the country at the start of this year. The group has already caused extensive damage to country's oil infrastructure, but has not taken over facilities or profited from them, unlike it has in Iraq. The UN Security Council said in a recent report that the terror group has significantly strengthened its foothold in Libya, voicing alarm about its attacks against Libyan oil installations as well as the massacre of Libyans, Press TV informed.

Libya remains divided between two governments, which are fighting for what remains of oil revenues. In this scenario, IS militants have taken advantage of the security vacuum to establish a foothold in the northern African country, seizing Gaddafi's hometown of Sirte and launching attacks in several other cities.

Libya's oil production was reported to have fallen by 10,000b/d to about 360,000b/d, due to the intermittent conflict, energy reporting service Platts informed. The current output volumes are 25% less than the production levels before the fall of Muammar Gaddafi in 2011. Libya, a member of the Organization of Petroleum Exporting Countries (OPEC), was producing more than 1mb/d before the civil war erupted. Country's last communicated report on crude oil production was 480,000b/d, as reported directly to OPEC in 2014.

The drop in oil output follows a deal brokered by the United Nations between the rival governments in December 2015. As a result, a unity administration held its first meeting in January, however, as discords remain there are fears how the competing administration will be able to unify the country.

Iran, Azerbaijan to Launch Oil, Gas Cooperation in Caspian Sea

Iran intends to officially propose a new plan for oil and gas cooperation in the Caspian Sea with Azerbaijan, Mehr News Agency reported. It will be an offer to participate in the exploitation and swap of oil and gas outputs, Iranian Oil Minister, Bijan Zanganeh, said, following a meeting between Iranian and Azeri Presidents, Hassan Rouhani and Ilham Aliyev in Tehran.

The Iranian Oil Minister expressed readiness for swap of crude and natural gas with Azerbaijan. In addition, the minister stressed that the cost of oil production in the Caspian Sea is extremely high for Iran as well as for other regional countries. A joint cooperation among Caspian littoral states would thus reduce production and transfer expenses.

Meanwhile, the National Iranian Oil Company (NIOC) and the State Oil Company of Azerbaijan Republic (SOCAR) signed a Memorandum of Understanding (MoU) on oil and gas industry, The Iran Project reported.

Further, the National Iranian Oil Company (NIOC) has also held several talks with a number of Kazakh and Russian companies for oil swaps in the Caspian Sea. Deputy Oil Minister and Managing Director of the National Iranian Gas Company (NIGC), Hamid Reza Araghi, had recently announced the launch of negotiations with Russia for a daily swap of between 50mcm to 60mcm of natural gas.

Iran, Pakistan to Negotiate Halted IP Gas Pipeline Project

Tehran is to negotiate the halted Iran-Pakistan (IP) gas pipeline project during Iranian President, Hassan Rouhani's visit to Islamabad at the end of March, Business Standard reported.

After having commissioned the project in December 2014, the two countries expressed their commitments to complete the pipeline after the economic sanctions against Iran were lifted, Tribune informed. Given the contracted obligations, Pakistan would pay millions of dollars in penalty if the project is further delayed in the post-sanction period.

There remain uncertainties, however, about the gas project as it was reported that the US and the EU have been trying to halt the plans. The western powers have been reported to be in support of other Middle Eastern countries such as Saudi Arabia and Qatar to ensure their presence in Pakistan and their dominance on the Pakistani gas market, as Tribune wrote in an earlier report. Islamabad had recently signed a $15b LNG deal with Doha that would further sustain Qatari dominance in the South Asian region and pose further obstacles to Iran's plans for expansion in Pakistan.

Amid delays with the IP pipeline, Islamabad had previously designed an alternative $2b gas pipeline project – LNG Gwadar pipeline. However, it was also stopped as the Pakistani Finance Ministry had been reluctant to provide $300m for co-financing of the launch. The government is now negotiating a commercial deal with a Chinese company for kicking off work on this project.

Bahrain Plans $355m Project to Recover Untapped Oil

Bahrain is considering launching a pilot project that will help recover huge untapped resources in the residual oil saturation in the Gas Cap of the Mauddud reservoir, informed Trade Arabia. The project of $355m is envisaged to expand gas processing facilities at the Bahrain National Gas Company in order to increase its daily capacity to 350mcf, according to Arabian Oil and Gas. Although a large percentage of the recoverable reserves of the Bahrain Field have already been produced, National Oil and Gas Authority managed reversing the declining oil production, and increasing the daily oil output by more than 50% from the levels of 2009.

Algeria to Issue Local Debt to Offset Global Oil Price Drop

Algeria plans to issue local-currency debt as a source of financing to offset the collapse in world oil prices, which halved government's energy revenues last year, Prime Minister, Abdelmalek Sellal said according to Reuters. The local-currency debt is to be issued in April with an interest rate of 5%, The Africa Report informed. Sellal did not give details of the size of the issue or its maturity, and it was not clear whether it would be open only to local Algerian businesses and banks. The minister stressed, however, that the government had no plans to issue foreign-currency bonds.

MENA Oil Exporters Lost Over $340b from Oil Slump

Oil-exporting countries in the Middle East and North Africa (MENA) lost more than $340b in oil revenue from their budgets in 2015, amounting to 20% of their combined gross domestic product, according to the International Monetary Fund (IMF), Gulf News reported.

IMF Chief, Christine Lagarde, said that supply and demand factors in the oil market suggest that oil prices are likely to stay low for an extended period. This will mean that all oil exporters will have to reduce spending and work on raising revenues.

Lagarde added that while oil-exporting countries are adapting to a new reality of low commodity prices, revenue mobilization was needed around the world, especially in the MENA region, which has relied heavily on oil for government revenues, according to CNBC. In her opinion, "these economies need to strengthen their fiscal frameworks and reengineer their tax systems—by reducing their heavy reliance on oil revenues and by boosting non-hydrocarbon sources of revenues."

The Middle Eastern governments have repeatedly said they were looking to diversify their economies away from the oil industry. In addition, six Gulf oil-producing countries - Saudi Arabia, Kuwait, Bahrain, Oman, Qatar, and the United Arab Emirates - are planning on introducing a sales tax for the first time and countries like the UAE have removed long-standing fuel subsidies. Still, the countries lack a system of personal income tax, which Lagarde said was needed.

The path towards income taxes could be eased by the introduction of a sales tax, a greater emphasis on corporate taxes and investing in a tax administration that could "eventually allow for the introduction of personal income taxes," according to Lagarde.

North African Al-Qaeda Claims Attack on Algerian Gas Plant

Al Qaeda in the Islamic Maghreb has claimed responsibility for a recent rocket-propelled grenade attack on an Algerian gas plant operated by Norway's Statoil, UK's BP, and state-run gas company Sonatrach, wrote The Wall Street Journal. Al Qaeda's Algeria-based franchise said the attack was part of its "war on the Crusader interests everywhere." The attack at the Krechba gas plant – an extension of the In Salah gas field, about 1,200 km south of the capital, Algiers – caused no casualties and no damage, but forced the facility to be closed as a precaution. Sonatrach said that Algeria's gas production had not been affected, informed Reuters. Algeria, holding world's third-largest reserves of shale gas, is seeking to revive its stagnating energy sector with help of Italy's Eni and US's Exxon Mobil.

Oman to Seek Foreign Loans to Finance Oil, Gas Projects

Oman's top oil and gas exploration and production company, Petroleum Development Oman (PDO), will restructure its debt portfolio in the future by borrowing abroad to finance its oil and gas industrial projects, rather than seeking more funds from its shareholders, Omani Minister of Oil and Gas, Mohammad bin Hamad Al Rumhy, told reporters, according to the Khaleej Times. The government plans to borrow between $5b and $10b abroad, the Central Bank informed. PDO is also seeking to restructure the company in order to support expansion and improve efficiency, Reuters reported. According to the company's annual report, PDO and its partners had invested $24.4b in companies in Oman as of 2013, which is 65% of its total investment package

Russia Begins Oil, Gas Exploration in Iran

Two major Russian companies, Rosgeologia and Lukoil, together with the National Iranian Oil Company (NIOC), have started a new round of studies on geological and geophysical oil and gas exploration in Iran, Mehr News Agency reported. Lukoil will study the condition of hydrocarbon oil traps and subsurface geological structures in West Karun oilfields in the southern Khuzestan Province and Abadan Plain. The NIOC's exploration management had previously announced that the value of the exploration project with Lukoil stands at about $6m and is to be fully provided for by the Russian company. Rosgeologia will develop studies related to seismic results of a number of gas and oil fields in Iran in order to make necessary preparations for exploration, according to Hellenic Shipping News.

France's Total Eyes 'Elephant' Oil Discovery Offshore Uruguay

France's Total is to drill one of its most important offshore exploration wells in the Americas this year as it hunts for a giant oil field in Uruguayan waters, according to Bloomberg.

The company plans to start drilling Uruguay's first offshore well in 40 years this March. The first Raya-1 well will be drilled at a depth of more than 3,411 meters. It will become the deepest exploration well by water depth on record. It is expected that first oil could come as soon as 2021, informed Seeking Alpha.

Total's Exploration Director in Uruguay, Christian Tichatschke, spoke about company's preliminary assessment of the field saying that "There could be an elephant out there. This is what we are chasing. It is a very risky project but we believe we can find something."

The Raya-1 and subsequent appraisal wells would have to prove resources of more than 1b barrels of oil to make it worth developing at those depths. Even if Raya is a dud, the state-run oil company and sector regulator Ancap still plans to offer 17 blocks, including three returned by BP, in an offshore licensing round that will start this year. The bid rounds are scheduled to be completed in 2017.

A discovery could further extend an exploration boom in a country that currently imports all of its oil and gas needs. "A discovery does not mean that Uruguay will be an oil producing country. A discovery is the first piece to a puzzle," Tichatschke said.

Total, Tullow Oil Plc, BG Group Plc, and BP Plc have invested more than $1b in exploration activities in Uruguay since they won eight offshore blocks in 2012, said Hector de Santa Ana, E&P Director at the state-run oil company and sector regulator Ancap.

If successful, the exploration activity could also rekindle further interest in the Pelotas Basin, shared by Brazil and Uruguay, even though investors shunned Brazil's oil licensing round in the basin last year.

In recent months, Uruguay's offshore potential has triggered a spurt of deal-making even as benchmark oil prices trade at 12-year lows. Norway's Statoil ASA said that it had acquired a 35% stake in a block held by Tullow. Statoil and Exxon Mobil Corp. have also acquired minority stakes in Total's block.

Mexican Pemex Seeking New Investors Amid Liquidity Crunch

Pemex, Mexico's state oil company, is hoping that an infusion of capital from private equity firms and other foreign investors will help it stave off a pressing liquidity crunch, Platts reported.

Pemex, which is going through a number of key reforms, is suffering from not only lower oil and natural gas prices. It has also had to increase its debt to fund outflows for taxes, duties, and capital spending, all while seeing a roughly 6.7% year-over-year oil production decline.

The company, responsible for providing close to 25% of the Mexican government's annual budget from its operating cash flow, posted a $10b loss in Q3 of 2015, making it the 12th consecutive quarter of recorded losses. In the first nine months of 2015 the company filed a loss of approximately $19.4b.

New CEO, Jose Antonio Gonzalez Anaya's first priority is to "assume the new reality for Pemex" of low oil prices. Pemex's budget was crafted with $50 per barrel of oil in mind; but with prices closer to $25 a barrel, the company, as many others, needs to cut expenditures to account for lower income.

Anaya is looking to cut corporate expenditures and adopt efficiency program. Prioritizing investments to direct operating expenditures towards the most profitable wells and fields is another high priority on the agenda, Rigzone reported.

South Africa to Launch Shale Gas Exploration

The first shale gas exploration in South Africa will begin in the next financial year, the government said following years of postponement, Reuters reported. Delays in awarding exploration licenses and lower oil prices led to firms such as Royal Dutch Shell pulling back on planned shale gas projects in the onshore Karoo Basin a year ago. The government said that exploration activities would lead to excellent prospects for beneficiation and add value to the country's mineral wealth.

According to a recent World Energy Council report launched at the Africa Gas Forum in February, South Africa has potential to become a major unconventional gas producer, Business Day Live wrote.

Brazilian Petrobras Selling Offshore Fields Worth $2b

Brazil's state-owned Petrobras is marketing offshore oil and natural gas fields worth as much as $2b as part of its plan to sell assets and pay down debt, Bloomberg reported. The Bauna, Golfinho, and Tartaruga fields are offered for sale. Bank of America Corp. is coordinating the business, according to an anonymous source. Until now, Petro Rio and LetterOne Holdings have put in offers for the Bauna field. Karoon Gas Australia is also bidding, according to a company's representative, wrote Business Times. Petrobras has 90 days to repond. The company has tried to speed up a long-stalled program to sell its assets as it struggles to finance expansion and pay down $130b in debt, the largest of any oil company.

India's ONGC Plans $5b Deep Water Investment

India's state-run company, Oil and Natural Gas Corporation (ONGC) will invest around $5b to develop a major deep water gas asset in the eastern Krishna Godavari (KG) basin, with a higher resulting level of output so that it will become the company's second largest hydrocarbon asset in the country.

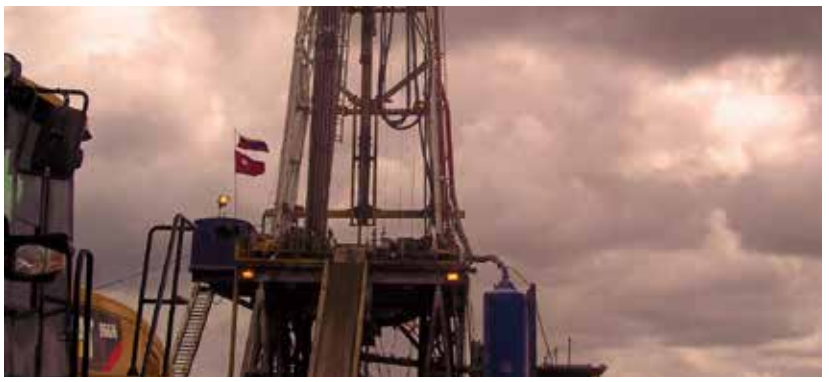
The new investment may boost ONGC's natural gas output by 25% and crude oil production by almost 15% over the next 4 or 5 years, a major leap for a company often criticized for failing to arrest a production decline from its ageing fields.

The asset, which the state-owned company acquired in 2005 under a swap agreement with UK's Cairn Energy, is expected to produce up to 17mscm/d of natural gas and 75,000b/d of oil by 2020.

Chairman and Managing Director of the country's biggest explorer, D.K. Sarraf, said that arrangement for the investment would be concluded by the end of March, according to Reuters.

The announcement follows a government decision to allow producers demand a higher price of gas extracted from hydrocarbon basins located in the deepwater and ultra deepwater, where costs can be significantly higher. All the discoveries in deep water, ultra deep, and in high temperature-high pressure (HTHP) schemes, which are currently not producing, would qualify for this new gas pricing regime.

Venezuela Launches Largest Oil Tenders Ever



British oil major BP and China Oil were awarded the largest oil tender ever that was launched by Venezuela's state-run oil company PDVSA. The tender was to import some 8 million barrels of Nigerian and US light crude for delivery from April through June 2016 at the Caribbean island of Curacao, according to a report by Platts. The imports will amount to about 90,000b/d, up from the 50,000 b/d of crude that PDVSA bought last year.

Crudes requested in the tender are US West Texas Intermediate and Nigeria's Qua Iboe and Brass River in 550,000 to 1m barrels cargoes to be discharged at PDVSA's Bullen Bay terminal in Curacao.

Additionally, PDVSA has a separate open tender to buy one to three cargoes, of 700,000 to 1m barrels each, of Russia's Urals crude with deliveries starting in April, Petroleum World reported. The company had received regular Urals crude cargoes from the Russian oil giants, Rosneft and Lukoil, during the second half of 2015.

Previously, according to Thomson Reuters Trade Flows data, until now, the Venezuelan state company has been purchasing mainly African and Russian grades as diluents for its extra heavy oil output. The imported crude was then processed at country's Caribbean refineries. But since a backlog of vessels formed in late 2015 following payment delays to its suppliers, PDVSA has been struggling to find providers for prompt deliveries.

Meanwhile, Russia's top oil producer Rosneft and Venezuela's state oil company PDVSA signed an agreement to set up a joint venture to develop natural gas in the South American country, Reuters reported. Rosneft also plans to invest $500m to raise its stake in its Petromonagas gas joint venture with PDVSA in Venezuela's Orinoco Belt region to 40%, Venezuelan President, Nicolas Maduro, said, according to Bloomberg.

The cash infusion expected from the deals will help the country to weather its deepest recession in a decade. Venezuela's state-run firm PDVSA faces around $5.2b in payments to bondholders in 2016, a sum that some experts say will be hard-pressed to meet after the government used nearly all of its available cash reserves to pay $1.5b in maturities recently.

British Tullow Strikes Oil in Kenya's Basin

UK exploration firm, Tullow Oil, has discovered oil traces in Kenya's Kerio Valley, raising hopes for boosting country's oil production potential. The firm reported seeing oil traces within a depth of 700 meters, while drilling at Cheptuket 1 Well, All Africa reported. The company said that the strong oil shores showed the presence of an active petroleum system with significant generation.

Tullow Oil previously stated that Kenya's oil could be commercially extracted at a break-even cost of about $25 per barrel, which is lower than the current global price of $30. In December 2015, Tullow had also announced that the potential size of oil resources discovered in northern Kenya's Etom-2 well increased.

Tanzania-Uganda's Oil Pipeline to Come Online in 2016

Construction of the long-awaited Tanzania-Uganda crude oil pipeline is expected to start in August 2016 and to be completed in 2019, country's industry's officials said according to Daily News. The 1,403km pipeline will link oil fields in Uganda's Lake Albert, in the Hoima region to Tanga port in Tanzania. Tanzania Petroleum Development Corporation (TPDC) said in a statement that the $4b oil pipeline project is to ship 200,000b/d. The crude oil pipeline will be carried out by three oil firms – UK's Tullow Oil PLC, France's Total E&P, and China's Cnooc. The project is envisaged to speed up socio-economic development between the two eastern African nations.

China Eyes Higher Import of Nigeria's Crude

China is seeking more crude oil exports from Nigeria in spite of the recent changes in oil prices. In 2015, China received 1.3% of Nigeria's annual oil export, reported Premium Times. The Economic and Commercial Counselor of the Chinese Embassy in Nigeria, Zao LingXiang, said that trade volume between the two countries stood at $14.94b in 2014, making Nigeria the third largest trade partner of China on the African continent. He added that the coming visit of Nigerian President, Muhammadu Buhari, to China in April would facilitate the implementation of agreements reached at the 2015 China-African summit in Johannesburg, aimed at expanding multilateral cooperation.

Nigeria to Restructure State Oil Giant Seeking Profit

Nigeria is set to split its giant state-run National Oil Company into 7 independent units in an effort to improve efficiency in the wake of the oil price crash, The Wall Street Journal reported. The Minister of State for Petroleum Resources, Ibe Kachikwu said that five of the seven operational units will be strictly business-focused in line with global best practices of national oil companies. The new units include those for Upstream, Downstream, Gas & Power, Refineries, Ventures, Corporate Planning & Services, and Finance and Accounts. While it was previously reported that the state-run giant would be split into 30 units, some uncertainties about government's policy remain, Premium Times Ng reported.

Russia Cuts Oil Reserves Estimates 50% to Last Until 2044

Russia will run out of oil by 2044, with production beginning to decline in 2020, according to Russian Minister of Natural Resources and Environment, Sergey Donskoy.

The minister further explained that although recoverable oil reserves were estimated at about 29b tons and the crude oil production was preliminary expected to amount to 505m tons, the volumes of proved reserves consist of only 50% of the given amounts, which is about 14b tons, according to experts. The reserves will thus last for only 28 years, unlike initially estimated 57 years, RT reported.

The minister said that even with the collapsing crude prices, making exploration activities more complicated financially, Russian companies will not cut back on exploration, rather maintain the 2015 levels.

While Surgutneftegaz confirmed there will be no reduction of its exploration activities, Rosneft stated that it is focused on increasing drilling by 40% compared to 2015. Bashneft is also seeking to compensate reduced extraction with increased stockpiles.

It was also reported that a revised production schedule for Gazprom Neft's Prirazlomnoye Artctic field, recently approved by Russia's Federal Subsoil Resources Management Agency, has seen the field's peak production period increased from three years to five. Sustainable drilling over this period means that oil production will be increased by a factor of 1.8, to a total of 23.1m tons, according to World Oil.

US Oil, Gas Companies Record Further LayOffs

US companies have announced further layoffs amid prolonged low oil prices, RigZone reported. Oil service companies such as Schlumberger and Halliburton have cut nearly 25% of their workforce. C&J Energy Services will lay off up to 87 employees at its facility in Robstown, Texas. Transocean Offshore Deepwater Drilling will cut its workforce by 80 employees on the idle Discoverer Americas (UDW drillship). Oilfield equipment supplier, National OilWell Varco (NOV), plans to permanently close its facility in Baytown, Texas, which will result in 107 lost jobs. As the US is currently one of the largest oil producers, the existing low oil price business environment necessarily translates into its economic downturn, The Conversation explained.

Central, Eastern EU Countries Object to Nord Stream-2 Gas Project

Governments of eight central and eastern European countries have raised objections to Russia's Nord Stream-2 gas pipeline project in a letter addressed to European Commission's President, Jean-Claude Juncker, on the grounds that it may be "potentially destabilizing geopolitical consequences," according to Reuters.

The letter was signed by the leaders of Latvia, Estonia, Lithuania, Hungary, Poland, Romania, Slovakia, and the Czech Republic.

The Nord Stream-2 project, which is currently under preparation, aims at doubling current gas supplies shipped directly from Russia to Germany across the Baltic Sea to the level of 110bcm/year, while circumventing the central and eastern European nations threatening their energy security.

The leaders expressed concern that the project might strongly affect gas market development and gas transit dynamics in the region. As EU relies on Russia for more than 30% of its total gas supplies, it is Ukrainian pipelines that currently represent the transit route for about 50% of all gas that Russia's Gazprom sells to the EU. Due to a recent armed conflict between Moscow and Kiev, EU has imposed sanctions against Russia. This has further increased anxiety among central and eastern European nations that Moscow may arbitrarily halt gas supplies via Ukraine in the future.

The contract for Russian gas transit through Ukraine to Europe was signed by Gazprom and Ukraine's Naftogaz in 2009 and expires at the end of 2019.

China Wasted 20% of Wind Plants Power in 2015

Energy wastage on wind farms in China worsened in 2015, as plunging utilization rates kept 33.9bkWh from being delivered to the grid. The reported figures represent the equivalent of 20% of total generated wind power, the energy regulator said, according to Reuters. China is working to boost its grid capacity, however, average utilization rates from wind farms power generation fell 165kWh in 2015 in comparison with a year ago. According to the report, China's total wind power capacity reached 133.3GW by the end of February, making up 9% of its national total, but generation levels accounted for just 3% of the national total in 2015.

Spain's Repsol Cuts Dividends

Spain's largest oil company, Repsol, has lowered its dividend after revealing a $2.2b quarterly loss, fuelling fears that cherished investor payouts are on the chopping block as energy companies grapple with a crude-price slump, The Wall Street Journal reported. Despite having its first annual loss, Repsol stated that it had not made any firm decision as to whether it would pursue the sale of its 30% stake in Gas Natural, informed Reuters. The company hopes to ease any concern among investors by cutting costs. However, that may prove difficult as Repsol has made several efforts over the past year to gear up its credit rating by selling assets and reducing spending, Forbes reported.

The New Age of Zohr

By Nataša Kubíková and Amanda Figueras

Egypt's gigantic Zohr field has raised enormous expectations for the future of offshore exploration in the Eastern Mediterranean. As it is one of the largest gas finds in this region, there is no doubt that the country has found itself a goldmine, which has marked a launch of a new age for Egypt's industry. After the drilling kicked off successfully in December and first test production in March showed positive results, there are only two questions left to answer.

When will Egypt's gas export from Zohr be materialized? And how will the Egyptian government handle severe competition in the gas market in the Mediterranean region?

Egypt's Journey to Zohr Wealth

It is a widely known fact that Egypt once used to export gas to Israel, Jordan, and Syria in early 2000s. In recent years, before the Zohr discovery, booming energy consumption and depletion of country's natural gas reserves had turned Egypt into a net importing nation.

Five years ago, the Israeli Leviathan field was the region's largest gas find with 22 tcf of proven reserves. It was touted as a potential game-changer in the Eastern Mediterranean. Rising gas demand in Egypt led the country to sign agreements to import Israeli gas, but the measure had proved to be unpopular. But there was no other option but to continue importing needed gas supplies. Therefore, and in spite of discontent, Egypt had inked three letters of intent to import Israeli gas in early 2015. At that time, in an interview with Daily News Egypt, the then-Minister of Petroleum and Mineral Resources, Sherif Ismail, also announced that economic studies to import gas from the Aphrodite gas field in Cyprus were underway. There was a clear path for Egypt, start gas imports after 2017.

A sudden change announced itself in August 2015. It has marked an energy milestone for Egypt and the entire region alike. The numbers speak for themselves - Zohr reservoir with its 30 tcf of estimated gas deposits is so far one of the largest gas find in the exploration history of the Mediterranean Sea.

According to first estimates, thanks to the Zohr field, Egypt is expected to double its natural gas production by 2018 and it will likely add an average of 2.7 bcf/d of natural gas to its production levels by 2019, as a study by the Egyptian Center for Economic Studies (ECES) forecasted. Such a boom will allow Egypt "to significantly reduce the expected daily deficit of 3 bcf of natural gas in 2018," the report read. Further, it also stated that the discovery will help address the energy bill deficit and ensure growth rates of 6% by the 2018-19 fiscal year.

Moreover, the report explained that Egypt will eventually have an option to export up to 29% of the extracted gas, while reserving the rest for domestic demand. With this image of future prospect, Egypt will once again be able to aspire for 'a net gas exporter' role. The question is no longer 'if', rather 'when' and 'how'.

Gas export projection allowed Egypt to play the checkmate on Israeli gas exporting strategy. "I think the Zohr gas find greatly reduces Israel's ability to export gas to Egypt. It may possibly still send gas to Egypt to be liquefied and re-exported from the existing LNG terminals," the Dubai-based analyst Robin Mills, Head of Consulting Manner Energy Group, wrote in an email to Egypt Oil&Gas.

As the analyst further explained, "Israel may have a short-term opportunity to export gas to Egypt until the Zohr field comes online, at which point I will be surprised if Israel maintains even a small market share in Egypt." Nonetheless, as Israel would soon lose its gas market share in Egypt, and it is highly aware of the fact, the country will necessarily seek to boost its diplomatic capacity to ensure that its exports are secured elsewhere. Israel will inevitably search for new customers, renegotiate deals with other regional states to expand them, and possibly seek to enhance its export deals even beyond the region. It would be an exaggeration to assume that Egypt's gas export opportunities will be limited in this regard. Nonetheless, it is rather realistic to consider the difficulties ahead and be prepared to navigate well in the competitive environment.

With the addition of Zohr, Egypt's total gas production will rise to 5.3bcf/d, which will by default reduce imports for country's energy needs. This further confirms Egypt's capacity to focus on gas exports. However, finding itself in a severe contestation with established gas players such as Israel or Cyprus, Egypt will need to search for efficient paths to the gas export market in order to maximize its output from Zohr. Although gas production is planned to be launched in 2017, and it will still take some years for the field to reach full-capacity output, the Egyptian government should be improving its gas export strategy already now, while doing its best to accommodate the demanding domestic needs.

Gas Production Outlook

Egypt's journey to gas production from the Zohr offshore field has so far been smooth. Eni started drilling 20 wells in December. Two months later the company completed the authorization process for development of the field. In the same month, Egypt's Minister of Petroleum and Mineral Resources, Tarek El Molla, approved the formation of the joint venture company between the Egyptian Natural Gas Holding Company (EGAS) and International Egyptian Oil Company (IEOC), PetroShorouk Petroleum, which is the subsidiary of the Egyptian company, Petrobel. PetroShorouk was tasked to complete the first stage of development of the Zohr field by the end of 2017.

In line with the planned progress, the Egyptian newspaper, Daily News Egypt, published information that the drill ship Saipem 10000 had arrived at the field in late December to begin drilling at the Zohr-2 well in the Shorouk block, which brought first results already a month later. Eni announced that the well has delivered up to 44mscf/d of gas during production appraisal, and added that at the time of performing tests, up to 120m of the reservoir was opened to production. This positive development offered more than that. It was also confirmed that the well has a good production capacity and it is estimated to deliver of up to 250mscf/d in production configuration.

Eni further stressed that the company will conduct drilling of three addition-

al wells in the Zohr field already this year. These will come in addition to the existing drilling wells – Zohr-1, Zohr-2, Nidoco North 1X, and Zohr-3 that was drilled by Saipem in mid March. Works on the onshore gas treatment plant construction have also already started, with bids for the offshore activities com-ing close to completion.

All pieces of a puzzle seem to have fallen in place and Eni is on its way to meet the agreed time-line. Zohr field is planned to begin production before the end of 2017, with an expected total out-put over 1bcf/d of gas. However, with a minimum development period of at least four years, it will be about 2020 before a full-capacity production starts in the Shorouk block. Eni therefore opt-ed for appraising the field "fast track development." It was widely reported that Eni's President met with Egyptian President Abdel Fattah El-Sisi the day before the massive discovery was announced, leading many to speculate the company was attempting to persuade the Egyptian gov-ernment to lead the charge for fast-tracking the timeline. This speed-up strategy may bring valu-able fruits to country's gas export vision.

Regional Gas Export Matrix

Zohr is an invaluable resource for the economic development of the country in terms of gas exports. While the find is large enough that exports could be planned for, Egypt's domestic market would probably need to be supplied first, no small task for an economy that gobbles up massive percentages of natural gas for electricity production.

The domestic production, however, is far from ideal for a company that participates in a $12 billion investment deal, as better prices could be achieved by selling the fuel on the international market. Although the situation in the domestic market may be different in 2017, given the ongoing efforts of the government to diversify its energy supplies, however the political realities of the gas-starved nation may slightly postpone this more attractive option for a short period of time.

As Eni is covering the full investment in the drilling, which is expected to last around 26 months, it will see this capital reimbursed. The Shorouk concession agreement signed between Eni and the Egyptian government calls for 40% of revenues from production in Zohr to go towards recovering the investment in the fields of up to $7 billion. Eni's repayment value will be covered over three years, while the remaining revenues will be split between Egypt, which will receive 65%, and Eni, which will enjoy 35%.

Although the agreement will be renegotiated again in 2019, the Egyptian government insists that all gas is to go to the domestic market, allowing exports only for excess gas. "The agreement states that all the production will be provided to the domestic market. Only in case of excess will exporting be allowed," EGPC Chairman, Mohamed El-Masry told Daily News Egypt in January 2016.

These arrangements were seen to bone less well for the Italian explorer in one way or another. Perhaps as a reflection of that, already the day after announcing the find, Eni publicly intimated that it would be open to selling all or part of its stake in the Zohr concession areas, however, no further details were given. Although the Egyptian government and Eni resolved the issues in De-cember, already in March 2016, pending possibility for Eni's stake sale has become a new shaky reality.

Eni's Second Thoughts

As all major international oil and gas companies cut their spending amidst global oil and gas price slump, Eni, in its new 2016-2019 business plan, has also announced that it envisions to shrink its investments and to sell stakes in giant oil and gas fields in Egypt and Mozambique to help it prop up dividends. "The disposals will be mainly through the dilution of our stakes in recent and material discoveries," Eni CEO Claudio Descalzi was quoted by Reuters as saying.

The state-controlled company said, as Reuters reported, that in addition to cutting overall group capital spending by 21% and exploration budgets by 18%, it will also target $7.9 billion from asset sales and $6.7 billion from cost cuts. Descalzi, nonetheless, added that in Eni: "We think gas will be the future." However, as more than 50% of the cost reduction is expected to come from renegotiating contracts, Egypt is likely to face major changes in its Zohr production deals soon.

Nonetheless, in light of most recent progress and enthusiastic activities in the Mediterranean areas, Egypt's Petroleum Ministry is expecting more discoveries in the future. A number of companies were reported to have currently started conducting their studies and they will release their preliminary results soon. In the wake of boosted investment interest, Petroleum Minister El-Molla, revealed petroleum sector's plans to develop potential new fields, increase the number of wells and intensify exploration, as well as encourage investment from foreign partners.

The announced Eni's plans may lead some to believe that a projected timeline will need to be re-visited and other structural issues addressed. However, as it has been confirmed that Eni's discovery of the Zohr field on Egypt's Mediterranean coast has raised foreign companies' interest and attracted potential investment in the deep water areas nearby, the Egyptian government will likely have numerous alternatives at hand to face any new challenges ahead.

Special thanks to Sama Eissa.

Managing Legal and Commercial Risks in the Egyptian Offshore Industry

By Hugh Fraser, Managing Partner of Andres Kurth MENA office and Legal Specialist in International Energy Law

The Mediterranean Offshore Conference that will be held on 19th – 21st April in Alexandria will be dominated this year by the impact of the major ENI Zohr Gas Field and BP West Nile Delta projects, which between them are anticipated to involve $27b of investment. This is an exciting time in Egypt's offshore oil and gas development. The West Nile Delta (WND) project will involve a water depth of 800 meters and the Zohr project dives even deeper to 1,450 meters out in the Mediterranean. Egypt's credentials as a deepwater producer are therefore being firmly set, and with it, the needs for the advanced technology and know-how that successful deepwater development and production entails.

Deepwater activities also magnify the risks and the challenges to the operators/investors and to the supply chain contributing to the project. Even in the current competitive market, risks associated with project delays and cost overruns are greater and the loss of production and damage to reservoirs and wells can have an exponential impact relative to onshore or shallow water problems. The risks associated with damage to the environment, to people, to facilities, vessels and rigs, to property and equipment, and to third parties are ever-present subjects in properly negotiated and executed contracts. For foreign players participating in the local market, there is the added challenge of compliance with Egyptian law and practice, which in some cases may involve statutory requirements, which may over-ride contractual attempts to state a contrary position. The experience of and lessons learned in places such as the North Sea, Gulf of Mexico, Brazil, and West Africa can therefore serve well and avoid wheels being re-invented in the Egyptian deepwater scene.

Egyptian Offshore Industry Risks

The management of financial risks entails an understanding and acknowledgement that the local market is more familiar with fixed price lump sum arrangements rather than the reimbursable contracts, which characterized the Gulf of Mexico and North Sea. Security of payment has been a major theme in recent years in Egypt although major strides have been made to pay down revenues due to oil companies, with debts now believed to be below $3b. Devaluation fears in relation to the USD/EGP conversion rate and constraints have been major topics in the early part of 2016 but on both fronts the Egyptian Central Bank has made major moves during March and the official exchange rate has been re-set at EGP 8.95 to $1. Withholding tax is generally set at 20% and this remains a significant brake on the ability of overseas suppliers to access the market.

The risks and challenges associated with deepwater projects also emphasize the fact that higher levels of know-how and technology are needed. This brings into play the needs to protect 'trade secrets', which are relevant to competitive edge, and to recruit and retain specialized personnel and to inhibit the prospect of "poaching". Patented technology must be properly protected within the territory alongside other relevant intellectual property such as industrial designs and copyright materials. Fortunately, Egypt is a full member and participant in the World Intellectual Property Organization (WIPO) and the WTO's Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS).

Techniques for Managing Deepwater Challenges

There are six main techniques to be deployed in managing legal and related commercial risks associated with deepwater projects: proper planning and due diligence; contracts; insurance; bonds and guarantees; legal compliance checks and audits; dispute management. Building and maintaining excellent relationships underpins the whole process.

Planning and due diligence, in addition to internal practices and policies, should involve referencing applicable trade industry organizations, consulting with non-competitive peer group players, sourcing and properly utilizing local partners - who can be invaluable guides to the challenges of client vendor registration and payment hoops, importing processes and local premises and supplier options – and appointing experienced local advisors who can assist to navigate the taxation, legal, and insurance lanes.

Well negotiated and executed contracts can have a huge impact on gained or lost value. Such contracts must speak accurately and precisely to a number of key themes and issues: scope of work and variations; remuneration and payment terms; work program and liquidated damages; standards of performance and warranty period; liabilities, indemnities, and insurance; bonds and guarantees; in-country value and local content; sub-contracting and back to back terms; confidentiality and intellectual property; termination and suspension; and governing law and dispute resolution. The price of poor contracting can run into billions of dollars in deepwater projects.

A properly maintained insurance scheme is a fixture in an effective risk management program. Very few contracts in the industry will not speak to third party and employer's liability insurance requirements - and, depending on the players and the projects – also construction all-risks; hull and machinery; buildings and property; professional indemnity; and credit risk insurances may all be in play. Key issues arising will be insured levels, deductibles, and exclusions; procedures claims; and waivers of subrogation rights.

The use of bonds and guarantees is a major feature of the market and the impact of deepwater risks means the bolts need to be bigger and tighter in this context. Any risk management program must take account of the need for parent or shareholder guarantees - and the substance of these, given current market conditions, and the need for performance and retention bonds, which may involve big numbers in deepwater projects. The availability of letters of credit (LC) should always be referenced and the advisability, capability, and associated costs of seeking confirmed letters of credit, when offered LCs from local banks with whom the beneficiary has no track record.

A fully thought through legal compliance program (LCP) pays tribute to the concept that prevention is far better than cure. And so it is in legal terms given the cost, time, and damage to relationship issues, which can all be major downsides if something goes wrong. An effective LCP must pay attention to some key themes: business licensing and registrations; local ownership and management rules (fortunately benign in Egypt); local employment, visa and training laws and regulations; local procurement; ethics and anti-corruption; taxation; unfair trading and competition law; environmental protection laws; and sanctions compliance - where Egypt may be used as a transit point for business activities focused elsewhere.

Prevention is of course not always possible and if a cure is needed this may involve damage limitation focused on dispute resolution process. These may entail one to one negotiation at one end of the spectrum, with full blown litigation at the other, and with mediation, expert decisions, and arbitrations in the middle. Egypt has a long established and respected arbitration forum in Cairo but the scale and complexity of deepwater projects will inevitably put pressure on senior management teams to plump for international arbitration forums and rules to govern their contractual disputes. However, investment in long term and trusted relationships can go a long way to preventing these circumstances arising or managing them when they do.

Let us hope that Zohr and WND are the start of what will prove to be a much wider and extensive deepwater oil and gas industry based in Egypt and that Egypt can accelerate its deepwater risk management learning curve from a strong and effective combination of international and Egyptian experience and expertise. Roll on MOC 2016.

Mediterranean Gas: The Wealth of Future Generations

IBRAHIM ZAHRAN
Former Chairman of Khalda Petroleum Company and Oil Expert

The yet-to-be-discovered natural gas in the Mediterranean Sea is one of the most important fortunes of future generations. Out of the 122tcf of natural gas ready for pumping and exporting in the concession area in the Mediterranean Sea, Egypt owns 3.4tcf, according to the US Geological Survey.

Throughout the past four years, the prices of oil were somehow stable, at $100 a barrel, however, they have dropped to reach $30 a barrel. Mediterranean gas has become of utmost importance to the Egyptian government as oil prices drastically drop. At the same time, the government needs to take advantage of this collapse in oil prices by stocking up on fuel especially that Egypt is a net importer of energy.

The current negotiations between the Egyptian Ministry of Foreign Affairs, Cyprus, and Greece for the re-demarcation of maritime borders are considered the most important element in order to achieve economic stability in Egypt. Our success in convincing them to re-demarcate borders helps us protect our Mediterranean fortunes. This also marks the beginning of placing Egypt on the global economic map.

Strengthening political relations with Cyprus will help with the re-demarcation of maritime borders. Article 131 of international sea laws gives Egypt the right to re-demarcate its maritime borders with Cyprus, which were determined in 2003, without deciding the starting point with Israel on the east. The article stipulates that in case a concessionary maritime zone between two countries is at a distance of less than 400 nautical miles - which applies to Egypt and Cyprus, the two countries can then seek re-demarcation of their borders if none of them can prove it owns more than half the distance.

Mediterranean gas discoveries will change our economic situation and will give Egypt the opportunity to shift from an oil-and-gas-importing to an exporting country. These discoveries are also capable of solving Egypt's energy crises. Furthermore, any energy surplus may be strategically stored in case energy crises arise in local markets.

Finally, I hope that Egypt would take a historic decision to search for oil and gas in some concession areas in the Mediterranean Sea without foreign partners and that it would spend large amounts of money to fully benefit from its oil and gas reserves.

However, this sovereign decision requires focused financial and economic studies due to the high costs of search and exploration processes in the Mediterranean, as one well does not cost less than between $100m to $300m. Wasting public money is the main reason why petroleum agreements are conducted using production-sharing operations, in which the foreign partner bears all risk in drilling wells in concession areas, and in case there is production, it is divided with the Egyptian General Petroleum Corporation (EGPC).

Mediterranean Natural Gas as a Savior of the Egyptian Economy

OSAMA KAMAL
Former Minister of Petroleum and Mineral Resources

One of the most important means to save the Egyptian economy from collapsing is the undiscovered natural gas in the Mediterranean. It is also the wealth of future generation which the government has to protect. The yet-to-be discovered natural gas reserves in the Mediterranean Sea are estimated to amount to 122tcf, as published analyses of the Mediterranean bedrock geology surveys indicate.

Egypt's problem of paying off debts to foreign partners is, however, the biggest obstacle that stands in the face of gas extraction from the Mediterranean, as some partners have threatened to halt production in the concession areas until the delayed payments are made.

I believe that the government has managed to attract foreign partners to pump new investments into the sector during the coming period because it has paid off a large part of Egypt's debts.

As oil prices continue to drop, the Mediterranean gas will become indispensable in the future. The government has to encourage foreign investment by paying off its debts, which are estimated at $3b, just like it did with the Italian company, ENI that had discovered the largest gas-producing field in the Mediterranean, Zohr, with reserves of 30tcf.

The cost of research and exploration in the Mediterranean is very high, not below $200m. Developing offshore wells is very expensive as well, which is why Egypt cannot complete such operations on its own without a foreign partner.

Foreign companies that are operating in the Egyptian oil sector have the ability to improve Egypt's economic status and to put an end to its energy crisis by 2019, despite the drilling risks that they are bearing in concession areas based the production-sharing operations scheme.

Mediterranean gas discoveries will change the status of Egypt's national economy at a global level especially that the government seeks transforming the country into a regional hub for crude oil and natural gas.

At last, I hope the government would take a final decision to spread the coal experience into the cement industry in order to save natural gas and give it to power stations instead to avoid power cuts. This would be of utmost importance, because Egypt imports gas at a price $10-$13 and sells it to medium-and-heavy-consumption industries for prices that do not exceed $4.5. This difference in buying and selling prices eats from the poor's subsidy money.

Mediterranean Gas Can End Egypt's Energy Crisis

AHMED ABDEL HALIM
Former Chairman of Petrobel and Former Member of the Geological Survey Authority

The natural gas fields that were discovered in the concession area in the Mediterranean Sea are considered the ideal solution to bring an end to Egypt's energy crisis and to stop frequent power cuts during summer. However, it is important for the Egyptian government to succeed in the demarcation of its maritime borders with Greece, through the help of negotiators from the Egyptian Ministry of Defense and the Ministry of Foreign Affairs, in order to determine the borders' starting point on the east with Israel.

These are Egypt's economic rights, and if any country violates rights of the other, the International Court may be involved to resolve emerged disputes. The Ministry of Defense and the Ministry of Foreign Affairs are considered the first line of defense and the key to maintaining Egypt's economic rights in the Mediterranean.

The crisis between Turkey and Cyprus regarding benefitting from the oil and gas fields in the Eastern Mediterranean will continue as long as Ankara refuses to recognize Cyprus' rights. This is the main reason why negotiations to demarcate its maritime borders with Greece were suspended. Therefore, negotiations between Egypt and Greece to demarcate official maritime borders between the two countries stopped as well.

Energy reserves in the Mediterranean Sea are estimated at 3.4tcf of natural gas and 1.7b barrels of recoverable oil. Egypt has at least 1.3tcf of natural gas in areas within its maritime borders and will not give up its economic and territorial rights to gas resources in the Mediterranean because it has a national plan to achieve gas self-sufficiency by 2020.

Egypt has 30 areas located within its Mediterranean maritime borders that will be drilled as soon as agreements with foreign partners on research and exploration have been signed.

Developing the Mediterranean fields is crucial as it would allow the government to extract additional volumes of natural gas, in addition to the extraction of natural gas reserves from the gigantic Zohr field, which holds about 30tcf, equivalent to 5.5b barrels of oil.

Issuing bids through the Egyptian Natural Gas Holding Company (EGAS) and carrying out seismic searches in the Mediterranean Sea as soon as possible are the most suitable solutions to end Egypt's energy crisis completely, especially that Egypt has large quantities of yet-to-be-discovered natural gas in the waters of the Mediterranean.

In addition, comprehensive development plans are the most important element in Egypt's petroleum sector in order to meet the local market's fuel needs, in particular as Egypt's energy consumption has increased by 9% during the last 3 years and after the January 25th revolution. This increase is the main reason behind fuel crises in all governorates and can only be solved by reducing the gap between production and domestic consumption.

Finally, the discovery of natural gas reserves in the gigantic Zohr field led to freezing Egypt's negotiations with Israel to import gas for a period that could reach 20 years with prices approaching $10 per million BTU.

Explore or Ignore? Egypt's Western Mediterranean

By Ahnie Litecky

The vast wealth of hydrocarbons that lie beneath Egyptian waters in the Mediterranean Sea has recently attracted international attention and possibly provoked envy of some countries. While massive finds in the eastern Mediterranean areas have intensified interest in expanding exploration activities in the region, Egypt's future may be promising when looking at the country's northwestern coast as well.

Scientific research has estimated that Egypt holds huge reserves in its western deep waters, which may help the country to progress towards energy security. This scenario may be realized if companies continue investing in exploration activities.

Success of BP's West Nile Delta Project

Exploration of Egypt's offshore gas potential began in the early 1960s. By 1975, the country started investigating deeper waters in the Mediterranean and ramped up exploration twenty years later. Egypt's northwestern coast, defined here as stretching from Alexandria to the Libyan border, has been mostly parceled out for development through the Egyptian Natural Gas Holding Company's (EGAS) concessions. Areas closer to the Nile Delta have already been shown to contain substantial gas reserves, particularly within BP's West Nile Delta project.

A year ago, BP pledged a $12 billion investment to develop gas resources in its West Nile Delta project, which contains two concessions known as North Alexandria and West Mediterranean Deep Water, in the waters off Alexandria. Today, BP holds majority interests in the two concessions of almost 83%, and its partner, RWE DEA, holds the remaining shares.

BP plans to develop the West Nile Delta Project in two phases. Phase One involves exploring and operating five major fields: Taurus, Libra, Fayoum, Giza, and Raven. According to the current schedule, the fields should be made operational by 2017. Additional five fields will be developed later. Last July, BP and DEA awarded a contract to subsea engineering and construction company, Subsea 7, to begin working on infrastructure to develop hydrocarbons from nine wells in the Taurus and Libra fields. In January this year, Subsea 7 agreed to develop the Giza, Fayoum, and Raven subsea fields beginning in 2017.

By 2017, BP aims to produce about 1.2bcf/d, which will equal about 25% of Egypt's current gas production. The company estimates that additional 5tcf to 7tcf of gas will remain in undeveloped fields.

Previously, in March 2015, BP's North Africa Regional President, Hesham Mekawi, stated in a press release that BP planned to double its current gas supply to the Egyptian domestic market in the next four years. According to Mekawi, the West Nile Delta Project "is a strategic project for BP and will play a key role in helping to secure Egypt's energy supply for many years to come. This deal is another example of our commitment to help unlock Egypt's oil and gas potential through continued investments."

BP's Mekawi told Reuters in January 2016 that the significant gas finds off Egypt's coast "give a big incentive to the players who are here and maybe others considering investing in Egypt to do more." He also said that "there is still a lot of gas to be found in Egypt in the Mediterranean."

Other companies exploring concessions in the northwestern Mediterranean coast, however, have not been so lucky. Edison's joint concession in the Sidi Abd El Rahman offshore block, just south of BP's West Mediterranean Deep Water block, turned up a dry exploratory well in 2009. One of Edison's partners, PTT Exploration and Production Public Co., continued exploration work until 2011, but found nothing substantial. OMV won a concession for the deep water Obaiyed block, just offshore from the town of Matruh, in 2006, but the company relinquished the block in 2011 after assessing area's low potential. Statoil had concessions for Ras El Hekma and neighboring El Dabaa, just east of the Obaiyed block. In 2011, the company also reported a dry well in the El Dabaa block and allowed its licenses for both blocks to expire in the same year.

Promising Hydrocarbons Off Northwestern Shores

Despite the somewhat limited hydrocarbon finds off northwestern Egypt until now, which have been mainly restricted to BP's West Nile Delta Project, there is still a good reason for oil and gas companies to expand their westward exploration. Multiple studies conducted by scientists such as A. Maravelis or G. Tari, have argued that huge reserves of hydrocarbons are waiting to be discovered in the deep waters off Egypt's northwestern shores. Greek researchers contended in the Bulletin of the Geological Society of Greece, published in 2013, that the area could potentially rival other gas fields in the eastern Mediterranean.

Northwestern Egypt's offshore region can be divided into three geological domains of interest here: the Matruh Canyon, the shelf area, and the Herodotus basin.

The Matruh Canyon is a rift basin that extends north to northeast from the Western Desert into the deep waters of the Mediterranean. It lies within the Matruh Basin. A nearby onshore well has demonstrated significant gas and oil shows, which, combined with gas chimneys and active mud volcanoes in the area, provide a strong prediction of a potential hydrocarbon find offshore. Also, the narrow shelf area, which hugs the Egyptian coast from the Libyan border to the Egyptian town of Marina El Alamein, can be linked to onshore discoveries and may hold hydrocarbon deposits.

However, the much larger Herodotus Basin has demonstrated the most promise. The Herodotus Basin, with an area more than 130,000 square kilometers, is located in the deepest part of the southeastern Mediterranean. The basin is bounded by the Nile Delta Basin to the southeast, the shelf area and Egypt's Western Desert to the south, and the Levantine Basin to the east. Libyan waters are located in the west, and in the north lay the Mediterranean Ridge and Crete. The Herodotus Basin is divided into Greek, Cypriot, and the Egyptian Exclusive Economic Zones (EEZ).

"The West Nile Delta Project is a strategic project for BP and will play a key role in helping to secure Egypt's energy supply for many years to come."

A wealth of scientific studies have shown that the basin appears to have huge oil and gas potential, including the probability of large stratigraphic traps and functioning petroleum systems. Of course, significant discoveries in neighboring areas, such as BP's West Nile Delta Project, which straddles the Herodotus Basin and the Nile Delta Cone, as well as the Aphrodite, Tamar, and Leviathan finds, also contribute to the likelihood that there are similar reserves in the depths of the Herodotus Basin.

In 2013, a collective of Greek researchers concluded in the above-mentioned study that the Herodotus Basin has at least the same amount of gas and oil as the neighboring Levantine Basin. As mentioned above, their published findings were based on a combination of seismic data, petroleum geology, basin comparisons, and surrounding geological structures. If these researchers are correct and the Herodotus Basin has resources volumes close to the resources of the Levantine Basin, then development of the area could have an enormous impact. The US Geological Survey has estimated that the Levantine basin holds a mean of 1.7b barrels of recoverable oil and a mean of 122tcf of recoverable gas.

Challenges to Egypt's Western Mediterranean Exploration

As Egypt's northwestern offshore region is believed to hold great promise as a hydrocarbon motherlode, it is unclear why the area has not yet been exploited. One major challenge to unlocking the energy potential of the Herodotus Basin is the area's extremely deep waters. Area boundary depths range from 1,000 meters to more than 3,000 meters. Ultra deep water, which is water depths of more than 2,000 meters, poses particular challenges that make oil and gas exploration technically and financially demanding. Drilling and completing wells in ultra deep water faces funding complications, and technical challenges that include weather, salt domes, adverse temperatures, and high pressure. However, advances in technology and expertise have improved seismic surveying and deep water drilling techniques, which now make exploring the resources of the Herodotus Basin an expensive, but a real possibility.

Another challenge that has so far curtailed exploration of Egypt's northwestern Mediterranean subregion is the limited geophysical 2D and 3D seismic data coverage. 2D surveys were conducted in 1999, 2005, and 2007, however, the subsurface images are generally of a poor quality. In June 2015, Petroleum Geo-Services (PGS), a Norwegian marine geophysical company, was contracted by EGAS to assist in "the largest seismic oil and gas exploration project in the Mediterranean," according to a PGS press release. The Norwegian company also stated that "Egypt's Mediterranean Sea offers exciting opportunities for oil and gas companies who would like to evaluate a relatively unexplored area in a region with significant hydrocarbon potential." PGS plans to reprocess existing 2D data and conduct new seismic 2D data acquisitions to enable a full assessment of the petroleum system in an 80,000 square kilometers area encompassing the Herodotus basin, the shelf area, and the Matruh basin. The collected data will be used to plan a future EGAS's licensing round, tentatively scheduled for 2017.

Explore or Ignore?

The Egyptian government is betting that foreign companies will decide to invest in further exploration of northwestern Mediterranean waters, as plans for the 2017 bid round and recent efforts to lure investors have shown. The government has to contend with a challenging economic situation that could potentially hinder exploration, but so far all indications point to a careful increase in exploration activities. Any major hydrocarbon find in Egypt's northwestern Mediterranean would have a considerable impact on the country's economy and energy future.

Investment rates in exploration are most recently rebounding after several troubled years that Egypt has witnessed. In November 2015, the then-Minister of Petroleum, Sherif Ismail, told the local press that the number of new areas explored for oil and gas decreased from 53 in 2010 to just 27 in 2013. There were no new concessions granted in the two years after the 2011 revolution. However, the 2014 and 2015 EGAS bid rounds attracted an impressive array of international investments, which indicate that companies are increasingly optimistic about exploring in Egypt, despite the volatile energy market.

"Egypt's Mediterranean Sea offers exciting opportunities for oil and gas companies who would like to evaluate a relatively unexplored area in a region with significant hydrocarbon potential."

The Egyptian government is trying to create a hospitable atmosphere for investment, a tactic which has boosted foreign investors' trust in Egypt's oil sector. According to Daily News Egypt, foreign companies plan to invest approximately $7.5 billion in oil and gas research and exploration in 2016. There are currently 108 joint ventures made up of foreign, Egyptian, and Arab companies, and additional 62 research and exploration companies that are working directly in Egypt. Egypt finalized 15 new exploration deals in January 2016 and is currently working on three major oil and gas deals worth $9.2 billion.

Given that many oil and gas companies have responded to the economic downturn by reducing investment in exploration activities, the above outlined figures suggest a rather impressive dynamic in Egypt. In the previous year, energy companies issued approvals for a limited number of projects, with no intention to assess the tactics considering the level of global oil and gas prices. Foreign companies' investments are now targeting merely major projects, promising highest profits. Minor or not yet developed projects have been paused or cancelled altogether. Rystad Energy, an Oslo-based consultancy firm, predicted that in 2016 worldwide oil and gas investments will fall to their lowest levels in the last six years.

The Future of Egypt's Northwestern Offshore Development

In Egypt, however, there are several incentives for energy companies to invest in the country's offshore exploration right now, according to Dr. Diaa Noureldin, an economics professor at the American University in Cairo, and an advisor to the Egyptian Center for Economic Studies, who recently spoke with Egypt Oil & Gas. The country's Mediterranean waters are strategically located to serve the energy needs of Europe and Turkey, especially after Europe becomes an open market in 2020. Companies can also work with the Egyptian government in negotiating favorable deals based on the currently low average gas prices.

The economic implications of additional hydrocarbon finds in the Mediterranean are huge and could go a long way towards creating a more favorable trade balance in Egypt, according to Noureldin. New oil and gas discoveries would help decrease the country's reliance on natural gas imports and help "create some form of certainty about Egypt's medium-term growth outlook," he said. Estimated improvement in country's growth rates encourages foreign direct investment, not just in oil and gas industry, but in other sectors as well.

Amr Mostafa, Vice Executive Chairman for Operations at the Egyptian General Petroleum Corporation, said in a speech at the Builders of Egypt Forum in early March that Egypt aims to be self-sufficient in fuel supplies by 2020. Mediterranean hydrocarbon discoveries could propel Egypt towards the goal of energy self-sufficiency.

With the stability of additional gas resources, the Egyptian government could remove gas subsidies that have encouraged consumption to skyrocket over the past few years. Current energy consumption in Egypt is "not balanced, not optimal," argues Noureldin. If the government removes subsidies, then consumption would hopefully settle into a more sustainable pattern. However, Noureldin cautions that any major gas discoveries could potentially have the opposite effect, at least in the short-term. "My worry is that it may delay the process of moving to a balanced energy mix," said Noureldin. The Egyptian government will have gained a "breathing room to delay subsidy reforms."

Egypt's northwestern offshore areas, with potentially rich hydrocarbon finds, are a possible ticket for companies looking to invest in promising exploration activities. The Egyptian economy would benefit hugely from the stability of additional gas fields. The roadblocks to development: technology, data, and low oil prices, are surmountable, which would make Egypt's northwestern Mediterranean the next frontier of offshore exploration.

Maritime Borders in the EASTERN MEDITERRANEAN

By Basma Mostafa

Wild waters of the Eastern Mediterranean spread a massive veil over wealthy gas reserves. Countries in the region have become feverish to lift it, claiming a better and bigger portion of resources hidden below the sea bedrock. But their eagerness to dig into the subsea richness often generates disputes and confrontations.

Under the international legal framework, maritime borders separating waters of regional countries are established to define zones of interests, delineate sea areas as part of countries' sovereign territories, while providing guarantees of peaceful relations among the states. However, at times, they provoke disagreements. In the Eastern Mediterranean, often overlapping maritime lines turn into a point of discord between Egypt, Israel, the Palestinian territories, Lebanon, Syria, Turkey, Greece, and Cyprus. Competition over the rights to utilize massive resources seems to be ballooning up the already existing tensions among certain countries to potentially conflictual scenarios.

In April 2010, the US Geological Survey (USGS) estimated that undiscovered, yet technically recoverable natural gas in the Mediterranean's Levant Basin area amounts to between 122tcf and 227tcf. In recent years, intensive exploration activities in the Eastern Mediterranean Sea have led to several major discoveries of large oil and natural gas reserves worth hundreds of billions of dollars. It is therefore no wonder that the competition is severe. The region with such wealthy potential has been dubbed a 'new Persian Gulf,' as William Engdahl, a US-German geopolitical analyst, put it, adding that the discovery of hydrocarbon resources may have major geopolitical implications for the economies of regional countries and their mutual relations.

"The border demarcation will not be sufficient to put an end to the conflict over the gas discoveries in the Mediterranean, *as the underground gas and oil reservoirs in this area are located at varying depths and reserves span [across the international borders].*"

Double Claims over Gas Resources

Maritime borders between Israel and Lebanon have been an issue of dispute for several years. Both countries claim an 850-square-kilometer stretch of sea off their coasts, close to an area where US and Israeli firms have discovered two massive natural gas fields, Tamar and Leviathan, which collectively hold an estimated 26tcf of natural gas.

The two fields are important energy sources for Israel as well as for Lebanon. Not only do the Tamar and Leviathan fields have capacity to satisfy Israel's electricity needs for several decades to come, but they would also allow the country to become a net energy exporter. Previously, Israel has been depending on energy imports and due to political instability in neighboring countries it has been suffering frequent energy supply interruptions, which it is currently seeking to prevent thanks to the new gas fields. Lebanon would also benefit from the two fields as it suffers from a struggling economy, large debt burden, and limited national budget. The country therefore claims it has a share in the Leviathan and the Tamar fields based on the maritime border arrangements. Israel responded to those claims.

Israeli marine law expert, Amir Cohen-Dor, told Israeli newspaper Globes that the Dalit and Tamar gas fields are within Israel's contiguous economic zone. The expert added that under the 1982 UN Law of the Sea Convention, which was put forth to delineate maritime borders, Israel can make use of any resources found within the earmarked territory. However, unlike Lebanon, Israel has not signed the 1982 Sea Convention. As a reason for this, the country said that it was due to fear that any future conflicts, that may arise, would fall in the hands of arbitrators, as stipulated by the UN Law, and they may be biased against Israel. In addition to lacking international commitment by Israel, the Marefa website wrote that there exist no maps for the disputed area that may help to resolve the discord.

These rampant tensions between the two countries further escalate on occasions. Armed confrontations between the Israeli Defense Forces and Lebanese actors, killing two Israeli soldiers and a Spanish UN peacekeeper, in January 2015, have

"The matter of maritime border necessitates partnerships and agreements."

demonstrated that a relatively minor cross-border incident or attack may lead to a wider conflict. Disagreements over maritime borders and pressuring claim for natural gas resources in the Eastern Mediterranean zone may pose some complications in the foreseeable future.

In regard to that, the two countries have already clearly indicated that if push comes to shove, they would opt for military force to protect their resources. In a report published by Bloomberg, Israel's Minister of National Infrastructures, Uzi Landau, said: "We will not hesitate to use our force and strength to protect not only the rule of law but the international maritime law." Similarly, on his part, Lebanon's Energy and Water Resources Minister, Jibran Bassil, told The Daily Star that Beirut is "determined to defend them [Lebanon's natural resources], especially since we are fully committed to the law of the sea. If Israel violates this law, it will pay the price."

As the Mediterranean Sea is an energy source of major importance to all involved countries in the region, tensions tend to spill over across the geographical borders and keeping simmering on different levels.

Tensions Spreads across the North

In the northern section of the Eastern Mediterranean, disputes over natural resources between Cyprus and Turkey have also escalated, even engaging other countries that found it necessary to intervene.

Cyprus could immensely benefit from gas found within its Exclusive Economic Zone (EEZ), which holds an estimated 3.5tcf of natural gas. Future exploration may even unveil the existence of additional volumes of gas. When this gas comes on stream, it can provide the country with energy for yet unidentified number of decades and help with its economic recovery. But Cyprus's geopolitical problems may hinder its ability to benefit from these resources.

As Cyprus' sovereignty over the island, its maritime territory, and its resources has been challenged by Turkey, tensions between Ankara and Nicosia escalated at times. Cyprus's northern region has been controlled by Turkey since the 1970s. The Turkish Republic of Northern Cyprus (TRNC) and the Turkish government argue that Turkish Cypriots should also take advantage of any development of offshore resources. The area under dispute lies to the east of Cyprus, where both Ankara and Nicosia are claiming oil exploration rights.

Minor confrontations between Turkey and Cyprus surfaced markedly since 2011; however, it was first an incident that took place in October 2014, which showed heated potential of bilateral disputes. Turkey decided to dispatch two of its warships in areas overlapping Cyprus's EEZ and started its own seismic surveys. Cyprus's President, Nicos Anastasiades, responded by suspending his participation in talks with the leader of the Turkish Cypriot community, Derviş Eroğlu, which were to find a comprehensive settlement of the issue related to the division of the island.

As a result, two other regional countries – Greece, and Egypt – took a stand on the incident. In their Cairo Declaration of 2014, which aimed at outlining and promoting multilateral cooperation in gas exploration in the Eastern Mediterranean, the two leaders called on Turkey to stop all of its seismic surveys in Cyprus's maritime areas. This trilateral scheme for energy cooperation with Cyprus had left Ankara standing outside the meeting room doors, which provoked a rather unfriendly response. In its immediate reaction, Turkey declared that its naval troops are permitted to apply the rules of full engagement if Turkish vessels find warships in the oil-rich area of the Eastern Mediterranean, while ignoring to recognize existing maritime borders law. The head of the Turkish navy, Admiral Bülent Bostanoğlu, revealed he had been handed over new orders in the event of 'a situation' involving hydrocarbons in the maritime region. "We will move according to the rules of engagement that have been given us," he was quoted by The Guardian as saying when asked how Turkey's navy would react if it encountered a Greek or an Israeli ship in the region.

As Israeli and Turkish exploration companies are already digging deep into the Eastern Mediterranean waters, and their approach is marked with undoubted firmness, uncertainties and maybe even fears over possible escalations make other countries search for allies.

Egypt's Share at Stake

The trilateral summit of Egypt, Greece, and Cyprus, which was held in November 2014, laid grounds for such a useful alliance that Egyptian President Abdel Fattah al-Sisi, Greek Prime Minister, Antonis Samaras, and Republic of Cyprus President, Nicos Anastasiades confirmed in a declaration. But the pillars of the alliance were again tainted with previous unresolved issues that mostly related again to the maritime borders dilemma.

Egypt is facing disagreements regarding its maritime territory with regard to both Israel and Cyprus. In 2003, Egypt signed a border delineation agreement with Cyprus that has drawn lines for the Exclusive Economic Zones of both countries. However, the agreement did not determine the starting point of the territory on its eastern side along the Israeli shore. When Israel discovered the Leviathan field in 2010, the country's maritime border with Cyprus was settled, however, lines separating Egyptian and Israeli waters were not clearly determined.

It is no surprise that the re-demarcation of Egypt's maritime border has become an urgent issue. In 2013, the Egyptian government made attempt to revise the existing situation. This was a decisive moment for the government in Cairo as until then, both Cyprus and Israel were controlling natural gas fields that were reaching closer to the Egyptian coast than to their own.

Under the 1982 UN Maritime Law agreement, the economic maritime borders of coastal countries reach out to a distance of 200 nautical miles, which is approximately 370 km. As Egypt's then-Assistant Foreign Minister, Ibrahim Yousry, explained, the Leviathan field is about 190 km away from the Egyptian port of Damietta and about 235 km away from the Israeli port of Haifa. This would necessarily mean that the field should belong entirely to Egypt. Similarly, and equally alarming is the current situation with Cyprus. In 2011, Noble Energy, a company already operating in Israel, discovered the Aphrodite natural gas field in an area that had been proclaimed as the EEZ of Cyprus. However, the location of the field with gas reserves estimated at 27tcf, which is worth approximately $120 billion, raised serious concerns. The field is situated at the southern foot of Mount Eratosthenes, which is an area that for over 2,000 years was believed to have been a part of Egypt's maritime sovereign zone.

According to reports published by Dr. Ibrahim Abdel Kader Ouda, Professor of Geology at the University of Assiut, and Dr. Nayel Shafie, a researcher at the University of Massachusetts in the USA, the experts believe that both gas fields are located in the Egyptian EEZ. As the Leviathan and Aphrodite fields together contain natural gas reserves worth about $200 billion in total, as Economics Professor at the American University of Cairo, Nawal al-Said, told Al Akhbar, even uninvolved observers may quickly assume that the struggle over maritime borders will continue. It will revolve around countries' sovereignty, energy security, economic prospects and geopolitical matrix.

Other experts have pointed out that Egypt's natural resources are being plundered. Amr Helmy, an economist who specializes in financial and stock markets, told Al Akhbar in 2014 that "Egypt has around 123tcm in reserves in the oil fields that are being looted by Israel."

Apart from questions asked about the Leviathan field's location, there is another zone in the Eastern Mediterranean that is being exploited, while Egypt's maritime borders remain at stake. Professor Nawal al-Said also told Al Akhbar that she believes that the Shimshon field is yet another Egyptian maritime field seized by Israel, as the reserves are being extracted from an area close to Egypt's coast. The field, which is being developed by ATB, the US oil and gas company, lies 114 km north of Damietta and 237 km west of Haifa. Some analysts would argue that Egypt should claim these sites in accordance with the international law. However, others point out that such an endless circle of legal suits may be counterproductive in a short term, and even damaging to national economies in a long run.

In February 2013, Assistant Minister Yousry, filed a lawsuit to the Administrative Court demanding the abolition of the Egypt-Cyprus maritime border agreement. It was first later the same year, when Egypt and Cyprus resolved their discord and agreed to cooperate in developing hydrocarbon reserves along their shared maritime border.

In a similar attempt, Yousry demanded that the maritime border between Egypt and Israel is also re-demarcated, yet the outcomes in this case are still to be negotiated.

Seeking Productive Partnerships

Voices that strongly advocate for multilateral cooperation as opposed to escalating already contentious relations among the regional countries, each with its unique historical burden, are helping to pave a new path towards a better economic prospect. These voices try to explain that the geomorphology of gas reservoirs in the Eastern Mediterranean makes it almost impossible to precisely set international maritime borderlines.

As Hamed Qarqar, the former Deputy President of the Energy Planning Department of the Ministry of Planning, told Al-Monitor: "The border demarcation will not be sufficient to put an end to the conflict over the gas discoveries in the Mediterranean, as the underground gas and oil reservoirs in this area are located at varying depths and [some] reserves span [international borders]. This matter necessitates partnerships and agreements to distribute shares of gas in common reservoirs among more than one country, and to accurately demarcate the borders to prevent any breaches between the concerned states."

It is evident that the complexities of natural gas reservoirs should be taken into serious consideration when discussing emerging disputes. Confrontational behavior, as some countries have shown, harms opportunities for reconciliation. Regional energy security cannot be guaranteed without positive and equal contribution from all engaged actors and the international community.

The trilateral Cypriot, Egyptian, Greek summit in December 2015 was an example of such multilateral commitment to reconciliation. As Cypriot government spokesperson concluded: "The energy in our region is the first concern of the leaders following the recent discovery of gas within the EEZ of Egypt. The leaders are discussing how the discovery will now affect the region." Already in April 2015, President Sisi agreed to the formation of a committee to redraw maritime borders between Egypt, Greece and Cyprus in order to seek mutual trust and aim at exploiting hidden natural gas resources in favor of all regional actors involved.

The Eastern Mediterranean truly promises economic benefits for countries that can exploit the offshore fields. Settlement of maritime borders, while reflecting on geological structures of the bedrock, would thus be the first step towards enabling regional cooperation. Seeking economic expansion to other markets may be another way of going about it. Energy exports targeting the European and Asian customers may give the region a more positive outlook.

In this way, natural gas may prove to have a multiplying effect. The wealth in energy sources that the Mediterranean Sea offers can produce generous economic, geopolitical, social, and security outcomes that will reach beyond the states in the region. For this scenario to come true, it is almost inevitable that the existing tensions in a volatile region be mitigated. Protecting one's offshore energy interests is not mutually exclusive to seeking multilateral partnerships.

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MEDITERRANEAN DILEMMA OF LNG BUNKERING

By Amanda Figueras

Tankers cruising the Mediterranean Sea have become a dilemma for shippers and oil and gas producers alike. They run on heavy fuel and marine diesel oil. Yet, it is liquefied natural gas (LNG) that is a safest bet for an environmentally friendly future and economic prospect in the region. Although initial conversion of ships to LNG requires construction of a complex bunkering infrastructure to power LNG ships in years to come, it makes for a sound economic investment, despite the challenge that will likely create for the oil industry.

Experts say that LNG is not only more stable and cheaper than other fuel sources, but engines that run on LNG fuel are 8%-9% more efficient. Until now, however, LNG is still not the main fuel used by ships in the Mediterranean Sea. The reason being that there is a major lack of LNG bunkering infrastructure and costs associated with equipping fleets to shift to liquefied gas require massive financial input. Some experts also indicate that other structural, technological, and legal issues hamper the process of introducing LNG as the main fuel source for maritime transportation.

LNG Bunkering Pioneers

The Scandinavian and the Baltic nations were first who enthusiastically embraced the LNG shift as the most viable option in Europe. Pilot projects in northern Europe have been developed with strong government support, while taking advantage of infrastructure that was already in place. Favorable environmental regulations have also helped to speed up the fuel conversion. Finally, low costs of LNG, compared to other variants of bunkering fuels, which are also compliant with the ECA Emission Control Areas (ECA) norms in Europe and North America, have skyrocketed demand for this fuel as a profitable investment commodity.

The Northern European success story unveils a huge potential of LNG fuel for shippers in other maritime regions. This option may become a new solution to industrial and domestic gas demand in the Mediterranean countries where there has been a growing demand for fuel alternatives in the last decade, in particular in subregions that are disconnected from national grids. Spain was the country in the Western Mediterranean that had the first experience with LNG bunkering schemes that supports viability of this fuel strategy.

Chances to introduce LNG fuelled cargo ships may become even more real as they come hand in hand with economic prospects for other sectors of the maritime transportation, mainly tourism.

Spanish Success in Tankers Retrofitting

As the first steps in the construction of the Western Mediterranean LNG bunkering infrastructure have come to light, Madrid has set for itself a target to converse from heavy to LNG fuel in line with a plan to diversify fuel sources. The Spanish Senate sees LNG as a realistic and viable source of maritime fuel for the future. Spain thus came to stand in the frontline of the initiative to implement LNG bunkering strategy in the Western Mediterranean waters, inspiring others in the eastern region to follow suit.

While European countries receive 86% of their gas through pipelines and the remaining 14% arrive in the form of LNG aboard tankers, Spain, in contrast, gains 53% of natural gas via pipelines and as much as 47% arrive as LNG by sea. What is more, the Spanish newspaper, Cinco Días, informed, the Iberian Peninsula receives LNG from 11 different destinations, including Algeria (55%), France (13%), or the Gulf nations (9%). Spanish government's heavy investment in LNG imports thus bones well for country's economic strategy to diversify its fuel sources. Unlike the rest of European countries that rely almost exclusively on Russian gas supplies, the Spanish model of LNG fuel prioritization may prove viable for other EU members in the future or for countries from the other side of the Mediterranean.

Spain operates 7 out of 22 regasification centers in Europe, which is 36.5% of the continent's LNG storage capacity and 90% of tanker loading capacity. By 2025, 11 Spanish ports are required to build up LNG cargo infrastructure, according to a national plan.

Companies such as Enagas and Gas Natural have been involved in cooperation with state-controlled entities such as the Spanish State's Ports. In February 2015, Spanish Port of Huelva announced that it was considering the development of LNG bunkering

facilities, as well as other infrastructure improvements at the port. The bunkering facilities would be part of a proposed gas export terminal.

Meanwhile, the Gibraltar Port Authority (GPA) also issued an annual performance review, which shows that the total number of ships calling for bunkers at the port rose already during 2015. "Whilst [still in] early days, this trend reinforces Gibraltar's position as the Mediterranean's leading bunkering port and its resilience as a centre of maritime excellence," said Bob Sanguinetti, CEO and Captain of the Port. In October 2015, Shell Gas and Power entered in negotiations with GPA to supply LNG to the western Mediterranean region, making Gibraltar into an LNG bunkering hub on the Sea.

It is estimated that the number of LNG tankers in Spanish ports that had undergone the so called 'retrofitting process' - engine and fuel modifications to run on gas - will increase to 46% by 2045, as a study conducted by Deloitte, the auditory firm, predicted. This change of trend is boosted by government's financial incentives. Currently, there is a 50% reduction in port charges for ships using LNG, and some industry sources suggest that the Spanish government could consider a reduction in tolls charged on regasification of ships.

It appears that the success of LNG bunkering in the entire Mediterranean will rest on incentives that will help to construct necessary infrastructures, and modify vessel technological capacity as well as on environmental regulations.

LNG Bunkering Infrastructure Lagging Behind

The imperative need to invest in LNG conversion will not magic up the change on its own. LNG fuel success depends on ensuring that there are sufficient LNG bunkers available for tankers and ships so that those involved can rest assured that the bunkering facilities are well developed within a reasonable distance and with sufficient capacity, as their vessels often ply in the far flung corners of the world and are dependent on supportive structures.

Major investments are therefore needed to achieve required maritime sector transformation. Incentives in the form of tax credits should be expanded in order to make the numbers work out.

As LNG prices remain linked to oil's fortunes, industry sources insist that the current global oil price slump can be exploited. Current global prices are the result of market surplus, and the situation is not due to change anytime soon. Oil supply will continue to be buoyant in the short term for as long as OPEC, and particularly Saudi Arabia, believes that defending their market share is more important than controlling supply and thus underpinning weak energy prices.

Environmental regulations and multilateral cooperation may also be needed to realize the conversion and introduce LNG fuelled ships at a reasonable pace. "There is huge potential to adopt LNG bunkering in the Mediterranean, but whether this happens will depend on the scope of environmental regulations, costs and cross-regional support to jointly develop projects," Francesco Campanale, Financial Planning and Control Manager at Offshore LNG Toscana, told Gas Intelligence, stressing further structural advantages of pursuing this path.

LNG bunkering infrastructure will prove efficient, as "a lot of countries are not connected by pipelines to the grid [and would therefore] benefit from these facilities," Campanale added. Although currently "the European Commission is [currently] much more focused on developing the north and most of the finance will be diverted there," according to Campanale," there needs to be more support from Europe" in the Mediterranean region too. The lack of LNG fuelling infrastructure in major bunkering destinations in the Western and Eastern Mediterranean and high investment cost for newly built LNG fuelled ships is hampering progress, according to data based on a market research published by the Transparency Market Research.

To date, merely some Offshore Support Vessels and Container Vessels have adopted LNG as a preferred marine fuel. Currently, 21.3% of orders for new LNG-consuming vessels are for containers ships, according to data available from the Boston Consulting Group. In Europe, 48 vessels currently operate on LNG, with another 29 under construction. The projections are that by 2020 there will be up to 1,000 LNG fuelled vessels in Europe.

Optimistic outlook stems also from the adopted framework of environmental regulations. If the International Maritime Organization (IMO) enforces the envisioned 0.5% sulpHur limit on ships globally as of January 2020, there will be an additional incentive for Mediterranean ship owners to invest in LNG as a bunker fuel. According to market forecasts, by 2030, approximately 32% of the global cargo fleet will be fuelled by LNG.

As offshore support vessels and coastal and inland ferries seem to call for a conversion to LNG fuel, LNG bunkering demand is increasing. This recent trend may help to further augment the growth of the market.

Reshaping Vessels Technology

The use of LNG requires delicate and complex infrastructures also throughout the chain of production. Therefore, incentives must come in bulks.

"There is huge potential to adopt LNG bunkering in the Mediterranean, but whether this happens will depend on the scope of environmental regulations, costs and cross-regional support to jointly develop projects."

Fred Olsen shipping company has been granted an $8.3 million EU fund to pay for the modification of one of its ship engines. The goal is to see how quickly it can begin to use LNG, but the process is complex. LNG requires a greater amount of storage space on ships, as a liter of LNG is equivalent to 0.6 liters of other liquid fuels. Moreover, its use requires a specially trained crew.

It takes usually one to three years to build a ship, depending on its specifications. Modern shipyard capacities are equipped for new vessel construction and possible conversion, along with facilities and equipment for LNG supply. But the surge in demand for LNG fuelled propulsion is greater than the shipyards are currently able to meet, as explained in an analysis by The Hellenic Ships News. It is likely that many builders will take advantage of the demand to hike prices. Nonetheless, the fact that LNG is 50% cheaper than its compliant alternative - low sulphur Marine Diesel Oil - implies that diesel fuelled ships will no longer be capable of withstanding LNG vessels in economic terms.

Furthermore, LNG fuelled tankers and ships can give economic promises to other sectors of the transportation industry, namely tourism.

One example for all is Meyer Werft. The company announced plans to build two new, next-generation cruise ships for Carnival's Costa Cruises in Papenburg, Germany. They will be the world's first cruise vessels to run on LNG power in port and at the sea, with each vessel exceeding 180,000 tons. They will accommodate a total capacity of 6,600 guests, making them the largest guest capacity cruise ships in the world.

The European Union requires all ports within the trans-European transport network to have LNG supply points by 2020. As can be expected, the proposal has generated heated debates. In order to achieve this objective, an initial European Cross Border project is underway, with the specific objective of introducing LNG as the main fuel for the shipping industry. This policy will likely serve to develop concepts and infrastructure within the Mediterranean region as well, while inspiring other non-EU countries in the sea region to follow suit one way or another.

Ship owners will likely accept the LNG conversion strategy if there is sufficient infrastructure, efficient supply chain, respective government support and LNG prices are low enough to justify the capital investment needed in new ships. Improvements will also be pushed forward through imposed strict regulations that are currently being formulated in line with the global climate change responsible policies.

Ultimately, the timeline and strength of environmental regulations will determine whether the LNG bunkering sector in the Mediterranean will progress as fast as in northern Europe, and lead to an overhaul transformation of the industry. Yet, a loss of residual fuel in favor of LNG may present a new challenge to the entire oil industry.

LNG to Launch New Era for Marine Fuel

By Amanda Figueras

In the spirits of the UN Climate Change meeting - UNFCCC COP 21 - held in Paris in December 2015, all nations need to do their utmost to reduce levels of polluting emissions as soon as possible.

The legal framework for the maritime transportation sector is defined by the International Conventions for the Prevention of Pollution from Ships (MARPOL) Annex VI, which was elaborated by the International Maritime Organization (IMO). The Annex further stipulates that Emission Control Areas (ECAs) be delineated, within which ships can navigate only with fuels composed of less than 0.1% of sulfur content. Currently, ECAs exist in the Baltic Sea, the North Sea, in parts of North America, and within the United States' portions of the Caribbean Sea. But there are no such protective zones established in the Mediterranean Sea.

The IMO is engaged in developing an equitable methodology for determining the metrics of CO2 emissions in line with the currently negotiated proposal to define a global cap on sulphur oxide (SOx) emissions to be reduced to 0.50% m/m as of 1st January 2020

As sources from the IMO explained to Egypt Oil&Gas, comprehensive analysis of these emissions are referring to Specific Fuel Oil Consumption (SFOC) rubric, which has determined that operation is optimal, when marine diesel engines are running at higher temperatures. The problem, however, is that at these temperatures nitrogen oxide (NOx) emissions increase. For this reason, some of the NOx abatement technologies are being developed to reduce the engine temperature by way of water fuel emulsion or injection. While this has a cooling effect that attends to the NOx emissions, it ultimately worsens the SFOC results as it makes the engines less energy efficient.

For the Mediterranean tanker operators, the IMO global initiative will mean an end to residual marine fuels, damaging for the environment. As tests have proven, SOx emissions depend on the type of fuel used by vessels, while nitrogen oxide (NOx) emissions can be eliminated by installing different engines for tankers. CO2 emissions are a result of the quantity and type of fuel used, but they are also influenced by engine and propulsion efficiency, wind and current velocities, wave heights, and other sea conditions.

Prior to agreeing on specific limits, the IMO is engaged in developing an equitable methodology for determining the metrics of CO2 emissions. It is currently developing a data collection system to monitor and report the fuel consumption from international shipping. The aim of such a data collection system is to analyze the energy efficiency and CO2 emissions from international shipping.

According to the global Testing, Inspection and Certification company, Bureau Veritas, an oil tanker emits 5 gr/ton/km, which is ten times less than a truck emits covering the same distance, and a hundred times less than what a plane produces. Yet, measures are to be taken to address the sea transportation pollution.

Bureau Veritas believes it has found a solution to decrease NOx, SOx, and CO2 emissions simultaneously. The answer is to switch from heavy fuel to LNG. Not only does LNG not emit SOx gasses, it even helps to reduce NOx emissions by 80%-90% and CO2 by 25%. LNG thus undoubtedly represents a clean source of energy.

Therefore, shippers are understandably nervous as adopting alternatives to currently used marine fuels will squeeze their budgets and extract funding to be re-directed to this goal, which they consider inconvenient at a time with little to spare. Necessarily, a loss of an outlet for residual fuel will become an issue for the global oil industry. As Greenhouse Gas Emissions (GHGs) remain in the spotlight, the use of oil as a marine fuel could be evidently coming to an end relatively soon.

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Refining In Environmentally Friendly Way

By Dr. Mohamed Saad Ibrahim, Managing Director of Egyptian Refining Company

The Egyptian Refining Company (ERC) aspires to become a role model for national projects aimed at adopting environmentally friendly operations to meet national and international standards. The ERC has developed a project that is being implemented through its Mostorod refinery site.

It envisions enhancing refinery's environmental performance, achieving efficiency, and adopting corporate social responsibility approach. ERC's ultimate goal is to produce high-quality products and an added value with benefit to society as a whole.

With the expansion and development of the Egyptian economy, the domestic demand for re-fined petroleum products, especially diesel, has increased. In addition, as more natural gas is utilized to meet Egypt's expanding requirements for electricity, domestic demand for fuel oil, on the other hand, decreases.

Nonetheless, technology applied in most of Egypt's refineries produces large amounts of fuel oil, but the growing demand targets lighter products, which has become one of the most im-portant challenges that Egypt's oil and gas industry is currently facing. The ERC's Mostorod project therefore aims at paving the way for solving these difficulties.

Project Framework

ERC is designing, constructing, and operating a world-class hydro-cracking/coking facility ad-jacent to the existing Cairo Oil Refining Company (CORC) in the Mostorod Petroleum Com-plex.

Within the complex, ERC refines atmospheric residue (similar to mazut) obtained from CORC's oil production to process high quality fuel for the greater Cairo area. The fuel is then sold to Egyptian General Petroleum Corporation (EGPC) allowing the country to reduce its current dependency on imported petroleum products.

The ERC Mostorod-based project that expands CORC refinery's capacity, demonstrates ad-vantages of a private-public partnership. While EGPC owns a 24% share in ERC, the remain-ing interests rest with other shareholders from among Egyptian and Arab investors, devel-opmental, and international banks.

The Mostorod refinery project promises to generate several economic benefits in a short term and environmental and social advantages in a long run.

ERC's Refining Processes

The CORC refinery processes crude oil to produce numerous products, 67% of which in-clude what is known as atmospheric residue. However, the CORC lacks technological facilities and equipments to further process the residue to be able to develop products currently at high demand in the local markets.

Therefore, under the current project, ERC purchases the atmospheric residue from CORC, and using the latest technology, it processes it to produce liquid products, currently still be-ing imported from abroad. The liquid products, including the coke and sulphur, generated by ERC are sold to EGPC for distribution within the Egyptian market.

ERC's Offered Products

European-Grade (EU V) Diesel

IATA Worldwide Specification Jet Fuel

Kerosene

Reformate

Naphtha

Liquefied Petroleum Gas (LPG)

Fuel Oil

Sulphur

Coke

Economic Benefits

The ERC project is designed to help reduce Egypt's dependency on imported petroleum products. The project will contribute to lowering the volumes of imported diesel and benzene by about 50% and thus help to prevent fuel shortages. For the first time, Egypt may enjoy locally produced diesel at international standards.

ERC will produce approximately 3.5m tons of transportation fuels - diesel, jet fuel, and gaso-line components – directly in Cairo, which is the largest consumption market area in Egypt.

In a longer term, the Egyptian government will also benefit from saved overall costs of over EGP 1b each year as transportation and insurance expenses will decrease in addition to cur-rently recorded product shipment losses. It will further generate revenues through storage and processing fees.

Meanwhile, it is expected that the project will provide 7,000 jobs during the construction phase, resulting in 700 permanent positions over its25 years of operations.

Overall, as the Mostorod refinery project is implemented with 70% of foreign investments received from different funds, it suggests that investors' trust in the oil and gas sector in Egypt is slowly being restored.

Environmental Enhancement

ERC's prime objective is to tackle environmental issues and to create an environmentally friendly complex paying special attention to water treatment and reduction of air pollution.

Within the project, a three-phase industrial wastewater treatment will be established based on the highest local and international standards. It will guarantee that water will no longer be discharged directly to the Ismailia Canal. Instead, wastewater will go to sewage after being de-toxicated at newly installed filters and treatment units. This will improve the water dis-charge and the overall quality of the Canal waters.

Further, the refinery will use a closed circuit cooling towers and thus help saving a large amount of water previously exploited also from the Ismailia Canal.

Moreover, the modernization will allow reducing air polluting emissions. Relying on natural gas as fuel, while replacing high-sulphur mazut, will help limit air pollution and improve the surrounding environment.

Extracting sulphur and converting it to solid sulphur will also reduce sulphur dioxide emis-sions, which come from burning of fuel, currently at the level of roughly 186,000 tons/year. The plan is to reduce the overall amount by 29%.

ERC will also provide CORC with low-NOx burners to replace the existing ones and thus fur-ther reduce the NOx emissions.

The production of fuels other than high-sulphur mazut will also be in line with the European Unitarian Universalists (EUU), standards. The refinery will install environmental measuring equipment in line with international norms to measure and monitor emissions into the air.

Similarly, the refinery will install new fittings and valves, which will further decline the vol-umes of air polluting emissions.

Implementation of some environmental improvements will come at a total estimated cost of $56.3m.

In addition, ERC will also equip floating-roof warehouses of the Petroleum Pipelines Compa-ny with double blockers to prevent leakage of gas emissions into the air.

Economic benefits and environmental improvements of refineries' operations have become two main objectives of ERC. Its project also promises other socially relevant contributions.

Community Engagement

ERC plans to actively engage with communities, tied to the project, through a variety of activi-ties such as meetings with community members and NGOs and opening Community Rela-tions Offices to serve local needs.

ERC will also deploy Community Liaison Officers and establish Grievance Mechanisms to ad-dress community's issues that may arise in connection with the project implementation.

Moreover, ERC will also develop a program for Vocational Training and Life Skills Develop-ment Scheme to serve the basic needs for employment within the community.

Studied Effects on Environment

As ERC aspires for environmentally enhanced performance of its refinery, the Mostorod modernization project has previously undergone a series of studies on environmental effects conducted by specialized departments of the Egyptian universities and by state agencies.

As a result, the Mostorod project was granted approval by Cairo, Ain Shams, and Alexandria universities. It has also received a permit issued by the Egyptian Environmental Affairs Agency as well as by Egyptian and international environmental bodies of experts such as Worley Parsons. The Governorate of Qalyoubia had also approved the construction of the re-finery.

The ERC plant operations are envisioned to continue for the next 25 years with a positive and promising outlook.

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CALL FOR PAPERS

EGYPS
EGYPT PETROLEUM SHOW
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Huge efforts are currently being put into Egypt's petroleum sector with special focus upon its most recent offshore gas find with plans to help alleviate growing domestic demand and create much needed feedstock for the downstream sector. The Country is now gearing up for significant investments in field developments, pipelines and transportation, processing technologies and infrastructure requirements, which are a must over the next 5-10 years.

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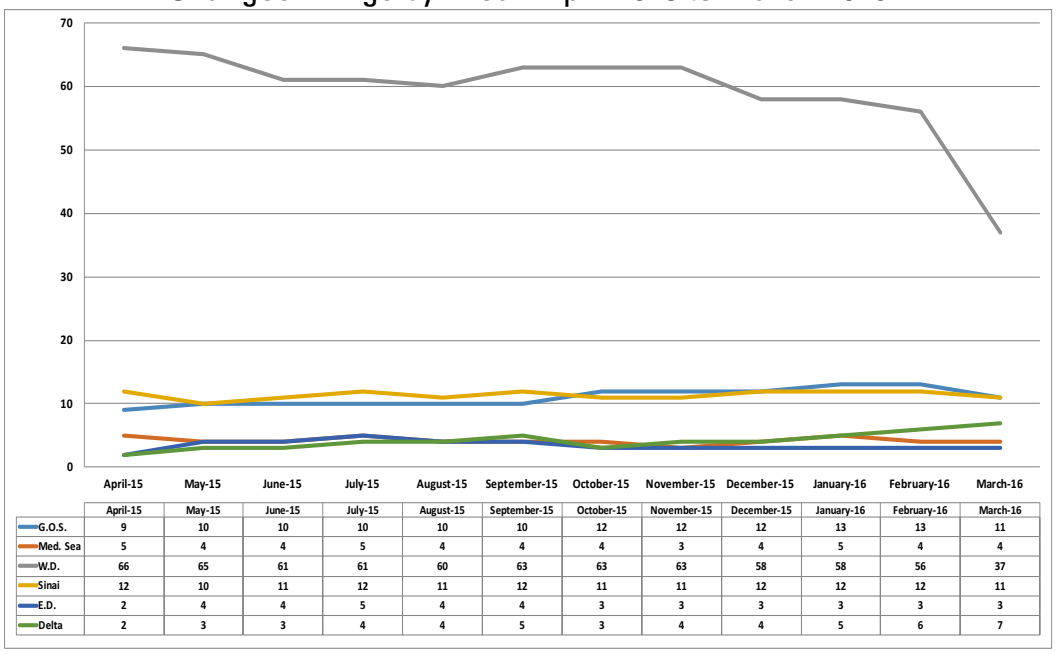
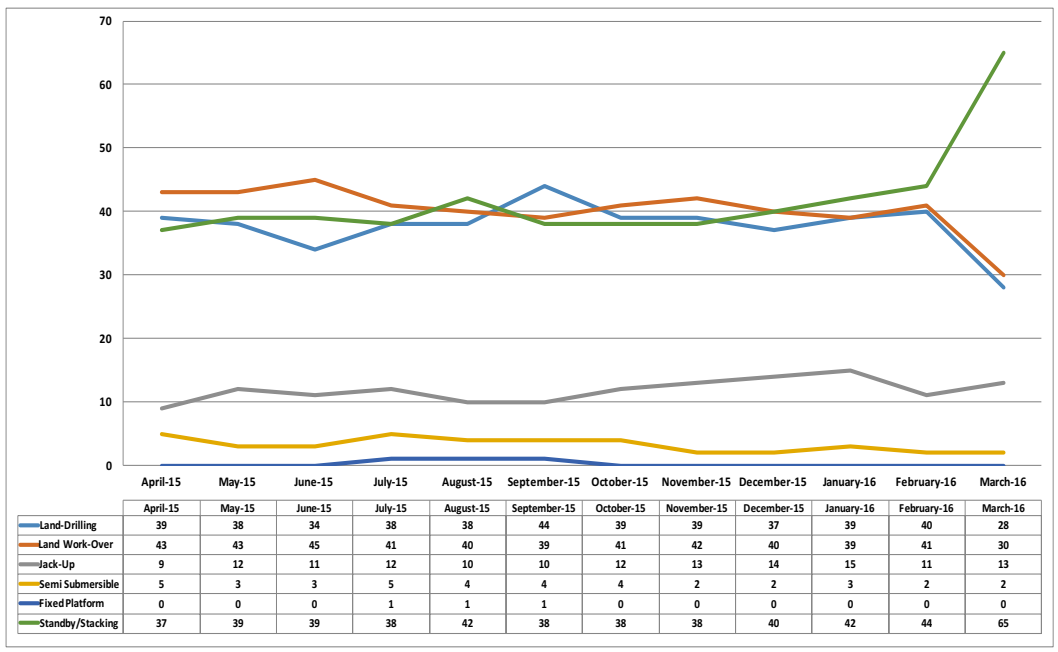
For further information concerning EGYPS 2017 please visit: www.egyptpetroleumshow.com or email: egyps.conference@dmgeventsme.com.

Changes in Rigs by Area - April 2015 to March 2016



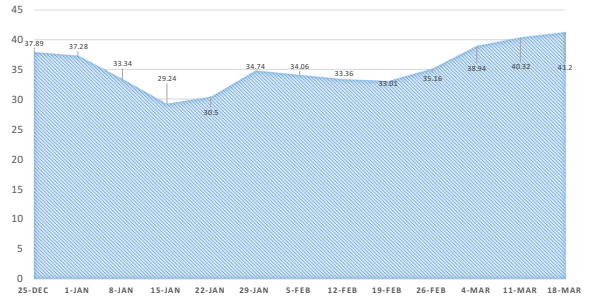
	April-15	May-15	June-15	July-15	August-15	September-15	October-15	November-15	December-15	January-16	February-16	March-16
G.O.S.	9	10	10	10	10	10	12	12	12	13	13	11
Med. Sea	5	4	4	5	4	4	4	3	4	5	4	4
W.D.	66	65	61	61	60	63	63	63	58	58	56	37
Sinai	12	10	11	12	11	12	11	11	12	12	12	11
E.D.	2	4	4	5	4	4	3	3	3	3	3	3
Delta	2	3	3	4	4	5	3	4	4	5	6	7

Changes in Rigs by Type - April 2015 - March 2016

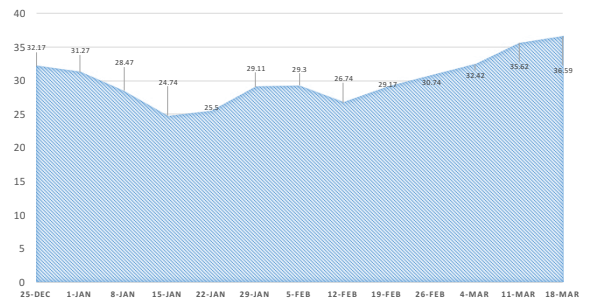


	April-15	May-15	June-15	July-15	August-15	September-15	October-15	November-15	December-15	January-16	February-16	March-16
Land-Drilling	39	38	34	38	38	44	39	39	37	39	40	28
Land Work-Over	43	43	45	41	40	39	41	42	40	39	41	30
Jack-Up	9	12	11	12	10	10	12	13	14	15	11	13
Semi Submersible	5	3	3	5	4	4	4	2	2	3	2	2
Fixed Platform	0	0	0	1	1	1	0	0	0	0	0	0
Standby/Stacking	37	39	39	38	42	38	38	38	40	42	44	65

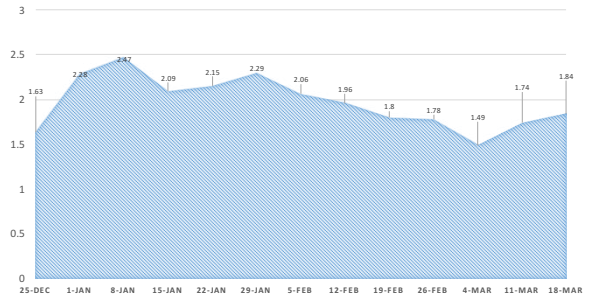
BRENT PRICES



OPEC BASKET PRICES



NATURAL GAS PRICES

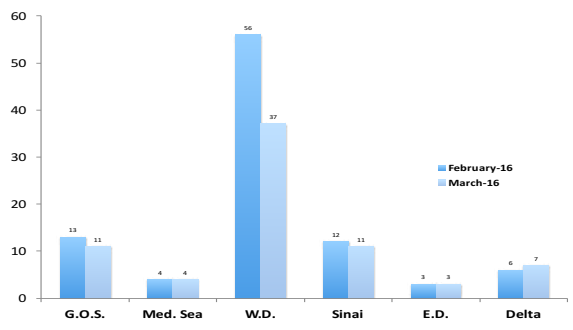


Production - February 2016

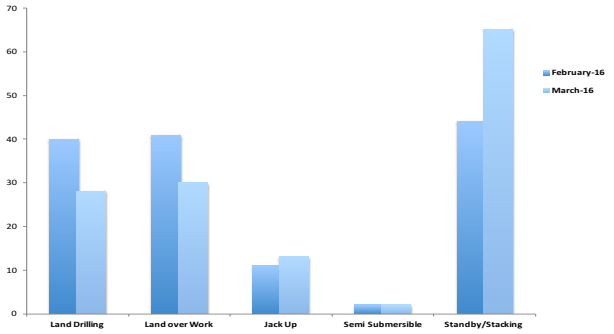
	Crude Oil	Equivalent Gas	Liquified Gas	Condensate
Med. Sea	0	9798393	208906	642742
E.D.	1902736	22500	3058	1638
W.D.	9428861	7030179	576580	1361709
GOS	3733238	515714	222720	64950
Delta	33864	2655179	122761	207589
Sinai	1880630	0	43510	23105
Total	16979329	21814463	1366329	2449204

Unit: Barrel

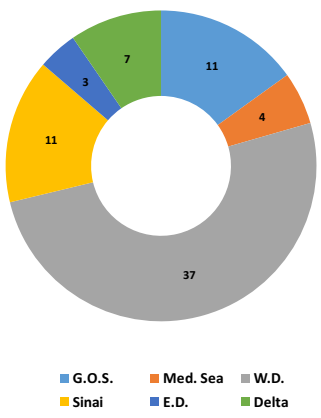
Rigs per Area - February - March 2016



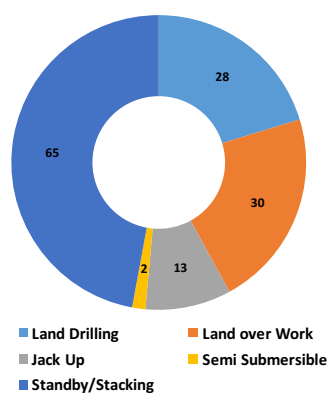
Rigs per Specification - February - March 2016



Rig Count per Area - March 2016



Rigs per Specification - March 2016



Rigs per Specification - March 2016

Location	Febru-ary-16	March-16
Land Drilling	40	28
Land over Work	41	30
Jack Up	11	13
Semi Submersible	2	2
Standby/Stacking	44	65
Total	138	138

Rig Count per Area - March 2016

Location	Febru-ary-16	March-16
G.O.S.	13	11
Med. Sea	4	4
W.D.	56	37
Sinai	12	11
E.D.	3	3
Delta	6	7
Total	94	73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