

Petroleum Today

5G TECHNOLOGY IS SHAPING
THE ENERGY INDUSTRY



- EGYPT SIGNS EAST MEDITERRANEAN GAS FORUM CHARTER
- ZOHR OFFSHORE PIPELINE BUCKLE ARRESTOR SSC TESTING & MITIGATION
- BLOCKCHAIN TECHNOLOGY IN THE OIL AND GAS INDUSTRY



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Petroleum Today

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٢ الرئيس السيسي يفتح مصفاة المصرية للتكرير

٣ فوز مرشح قطاع البترول بمنحة دراسة الدكتوراه من هيئة التعاون الدولي اليابانية

٤ واشنطن وأثينا تتفقان على مشاريع مشتركة للطاقة والغاز في المتوسط

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Petroleum Today

EGYPT SET A STABLE STRATEGIC TIES

Egypt takes a major step towards its regional energy hub ambitions with the formalization of the EastMed Gas Forum: The Eastern Mediterranean Gas Forum is now officially an established organization headquartered in Cairo after six of the seven founding states signed its charter, marking another key step in Egypt's path to becoming the region's premier energy hub.

The organization will serve as a market platform for natgas producers, consumers, and transit countries in the region to develop existing resources and develop the infrastructure for future exploitation, in addition to regulating natgas policies in the region that protect the rights of member states to preserve their resources.

Through the forum, member states will exchange information and seismic data studies on potential gas wells and delineate new gas finds that straddle maritime borders, Member states could even get preferential rates on each other's gas supplies, as well as preferential access to liquefaction facilities, he said.

In addition to Egypt, the founding member states are Greece, Cyprus, Italy, Israel, Jordan, and Palestine. France had formally requested to join the forum as a member while the US asked to be a permanent observer. Private and public sector companies will also be included as members of an advisory committee.

The door is not yet closed to others who want to join: Other countries can apply to join "as long as their goals match those of the forum," Oil Minister Tarek El Molla said.

The charter has been in the works since the forum's first launch meeting last year, in which the founding members agreed to move ahead with creating a regional market to develop the eastern Mediterranean's gas reserves.

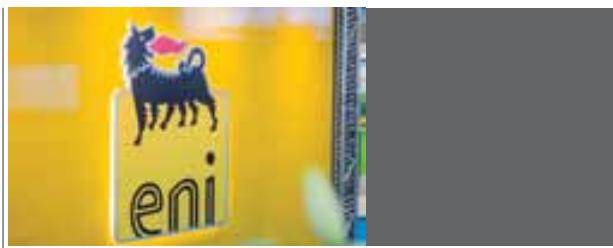
El-Sisi inaugurates \$4.3bn Mostorod petroleum refining complex



The Egyptian President Abdel Fattah Al-Sisi has inaugurated the Egyptian Refinery Company's (ERC) project in Mostorod with investments of \$4.3 billion (EGP 70 billion), as it is one of the most important petroleum refineries in Egypt and Africa, producing 4.7 million tons of petroleum products per year. This giant project comes in the framework of the ministry's plan to increase production and reach self-sufficiency of petroleum products through establishing more updated refineries. The Minister of Petroleum and Mineral Resources, Tarek El Molla, presented the strategy for infrastructure development in Egypt's refineries, confirming the importance of the president's support. According to El Molla, the ministry is updating the infrastructure for transporting, storing and shipping petroleum products at a cost of \$3 billion (EGP 48 billion).

Eni, new gas discovery in the “Great Nooros Area”, Mediterranean Sea

Eni (as the Operator of the Block) and bp (as contractor member) announce a new gas discovery in the so-called «Great Nooros Area», located in the Abu Madi West Development Lease, in the conventional waters of the Nile Delta, offshore Egypt. This new discovery, achieved through the Nidoco NW-1 exploratory well, is located in 16 meters of water depth, 5 km from the coast and 4 km north from the Nooros field, discovered in July 2015. The Nidoco NW-1 exploratory well discovered gas-bearing sands for a total thickness of 100 meters, of which 50 meters within the Pliocene sands of the Kafr-El-Sheik formations and 50 meters within the Messinian age sandstone of the Abu Madi formations, both levels with good petrophysical properties. The preliminary evaluation of the well results, considering the extension of the reservoir towards north and the dynamic behavior of the field, together with the recent discoveries performed in the area, indicates that the Great Nooros Area gas in place can be estimated in excess of 4 Tcf.



Misr Petroleum to Provide E-Payment Solutions for Fuel Supply

Misr Petroleum Company signed an agreement with E-Finance company to activate the fuel management and operation system to provide e-payment solutions for the company's clients, General Trade Union for Petroleum Workers (GTUPW) reported. Besides providing e-payments, the agreement includes developing and managing an electronic system for e-cards instead of coupons, which puts the company on the right track to digitize its services. Hussein Fathy, Head of Misr Petroleum, said in statement that this step comes in line with the digitization initiatives adopted by the state to control and monitor fuel's distribution. He added that this contract ensures timely and accurate fuel delivery by e-payments. He elaborated that this system will facilitate allocating and distributing petroleum products as well as redistributing fuels for cars directly through the system. Fathy explained that it will also provide big data for fuel supply through reports entailing the amount of used fuel per vehicle as well as the places and time of supply. In addition, this system will detect any manipulation that may occur by monitoring the actual consumption of cars and defining any possible fraud.



The Egypt Petroleum Show (EGYPS) to Take Place in May 2021

The High Executive Committee of the Egypt Petroleum Show (EGYPS 2021) has announced that its fifth edition will be held in the period from May 31 to June 2 of 2021 under the theme of “North Africa and the Mediterranean: Delivering Energy Today”. The committee, headed by the Minister of Petroleum and Mineral Resources, Tarek El Molla, elaborated that this date has been chosen after discussing and assessing the situation of the coronavirus outbreak, seeing that the time will be safer for partners and investors to travel. About 35,000 participants from 80 countries are expected to attend EGYPS 2021. The event is also expected to witness the participation of 500 exhibitors, 27 international and national oil companies, 2,000 delegates, and 300 speakers.

Egypt brings online new crude pipeline at al-Hamra Port



Egypt has brought online a new crude oil pipeline at the al-Hamra petroleum port on the Mediterranean Sea and set out other planned improvements to the port as part of the country's efforts to become a regional energy hub. The 8-kilometre Hamra-Shamadoura loading pipeline, which links the port with an additional offshore tanker loading facility, will increase the port's shipping capacity to 1 million barrels of crude per day and will be a key part of the port's capabilities, the cabinet said in a statement on Wednesday. Petroleum Minister Tarek El Molla also said crude storage at al-Hamra had increased, boosting capacity by 250,000 barrels to a total of 1.5 million barrels, to “securely receive quantities of crude oil ... from companies operating fields in [Egypt's] Western Desert,” the statement said. Two more storage tanks will be built at the port to increase its capacity to 2.8 million barrels, El Molla said. The Hamra petroleum port lies around 120 kilometers west of Alexandria, Egypt's second-largest city, and is run by the Western Desert Operating Petroleum Co (WEPCO).

Egypt drafts plan to deliver natural gas to New Valley governorate for the first time



Egypt has drafted a plan to deliver natural gas for the first time to the New Valley governorate in the Western Desert, Petroleum Minister Tarek El-Molla said on Monday. The announcement came following the signing of a cooperation protocol between New Valley's Governor Mohamed El-Zamaloot and the heads of Egypt's Natural Gas Holding Company (EGAS) and TAQA Arabia to deliver compressed natural gas (CNG) to the Governorate. The gas deliveries will gradually replace gas cylinders, El-Molla said, adding that CNG is an optimal solution to supply natural gas to the governorate, which is the country's biggest in terms of land mass and the smallest in terms of population. The project will be implemented using CNG feeding technology where terminals will deliver gas to 14,000 homes in the governorate's Al-Kharga city during the first phase, with other areas to follow later.

ARAB & INTERNATIONAL NEWS

Libya's Oil Crescent Gets Back to Work as Sarir Field Opens



Libya's oil industry continued to revive this week following a truce between the main factions in the OPEC member's devastating civil war. The Sarir field opened on Tuesday, according to its operator, Arabian Gulf Oil Co. Production is just 30,000 barrels a day for now. But with a capacity of about 200,000, it's the biggest deposit in the country to restart since an almost-total shutdown of Libyan energy facilities in January. Much of the country's "oil crescent" -- a cluster of ports and fields in the east -- is back onstream, though not yet at full capacity. Libya's western fields, including Sharara, the biggest in the North African nation, are still closed. The state-run National Oil Corp. has said foreign mercenaries and other fighters must leave facilities before they can reopen. Overall oil output has reached about 300,000 barrels a day, up from 80,000 at the start of September.

Saudis Defend Oil Recovery With Warning for Shorts, OPEC+ Cheats

Saudi Arabia showed its determination to protect the oil recovery, warning short sellers not to challenge its resolve and delivering a rare public rebuke to a close ally that had been over-producing. After a meeting with fellow OPEC+ ministers on Thursday, Saudi Energy Minister Prince Abdulaziz bin Salman dropped clear hints that there could be a change of direction in production policy before the group's next ministerial meeting in December. As the rebound in oil prices falters, the prince invoked his hero, former Federal Reserve Chairman Alan Greenspan, with an attempt to bend global markets to his will. Prince Abdulaziz confronted the challenge of a weakening oil market with a bluntness rarely seen inside the coalition of 23 producers.



Kuwait Aims to Finish Mideast's Biggest LNG Terminal by March



Kuwait aims to open what will be the Middle East's largest import terminal for liquefied natural gas in March. The Al-Zour plant will allow Kuwait to receive 22 million tons of LNG (about 31 billion cubic meters) a year, almost doubling the region's capacity. The LNG market is expected to grow quickly in the next few decades as countries shift from oil and coal to cleaner energy. The global trade in LNG will probably increase to more than 1,000 bcm annually by 2035 from roughly 425 bcm today, according to BP Plc. Kuwait is one of the world's biggest oil exporters, shipping almost 2 million barrels a day, but pumps relatively little gas. The OPEC member produced 18.4 bcm of gas in 2019 and consumed 23.5 bcm, BP said in a report. It was the Middle East's biggest importer last year and the 14th globally.

China Plans Strategic Boost to Vast State Commodity Reserves

China's next five-year plan beginning in 2021 will call for increases to its mammoth state reserves of crude, strategic metals and farm goods, said officials familiar with the discussion. Beijing is keen to heed the lessons of the coronavirus crisis and deteriorating relations with the U.S. and its allies. That means ensuring the nation's secretive stockpiles, almost certainly among the world's largest, are plentiful enough to withstand supply disruptions that could cripple its economy, the officials said, asking not to be identified because the matter is sensitive. China's top leadership will next month lay out its strategy for 2021 - 2025 that will include ramping up domestic consumption and making more critical technology at home, in a bid to insulate the world's second-biggest economy from worsening geopolitical tensions and fraying supply chains.



Securing food supplies, fuel and materials is a precondition of greater self-reliance for the world's biggest importer of commodities.

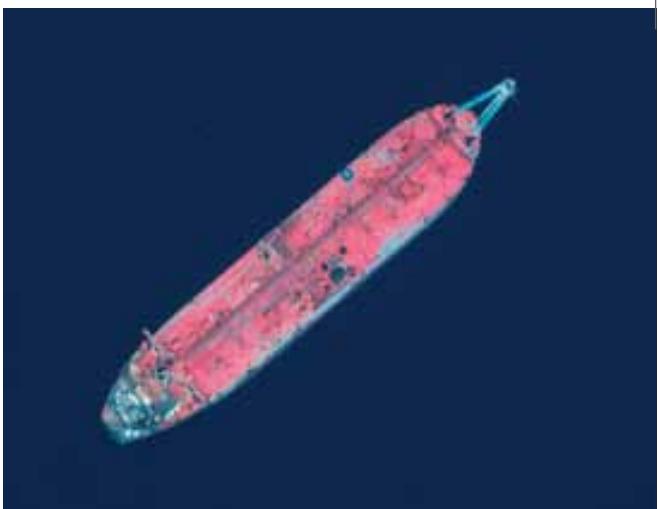


Vietnam Approves Exxon's \$5-Billion LNG-To-Power Project

The port city of Hai Phong in Vietnam has approved a liquefied natural gas (LNG) project for power generation, expected to be developed by U.S. supermajor ExxonMobil and to cost US\$5.09 billion. The people's committee of the city of Hai Phong approved the project which is expected start electricity generation in 2026 or 2027.

Venezuela Has Hard Time Emptying Tanker at Risk of Sinking

Venezuela is finding it difficult to secure a vessel on which to empty an oil tanker at risk of sinking off its coast because of U.S. sanctions. The sanctions are scaring off foreign tankers from potentially taking the 1.1 million barrels of crude out of the Venezuela-flagged Nabarima floating storage unit. Previous plans to unload the vessel over the past year have also been met with resistance from local workers because of the risks posed by the clashing currents of the Orinoco river and the Atlantic. The vessel's conditions is "stable" and recent "water leaks" were addressed, Eni said in a statement sent to Bloomberg. Eni is collaborating with Petrosucre to "define and implement a program for unloading the oil cargo from Nabarima," which requires the use of a "dynamic positioning tanker" that must be given a green light under U.S. sanctions, the company said.



CORPORATE NEWS

Saudi Aramco and Sumitomo Chemical to lend Petro Rabigh \$2 billion

Japan's Sumitomo Chemical and Saudi Aramco will lend \$2 billion to their refinery and petrochemicals joint venture as it faces a shortfall of capital due to the COVID-19 pandemic and periodic maintenance, Sumitomo said on Thursday. Sumitomo Chemical plans to provide \$750 million, or 37.5 percent of the loan, to Rabigh Refining and Petrochemical Company (Petro Rabigh) while Saudi Aramco will lend the rest, a spokesman at the Japanese chemical company said. Sumitomo Chemical will use funds it raised by issuing hybrid bonds last year for its share and the loan will be provided soon, the spokesman said. The Japanese company also said the financial completion guarantees it and Saudi Aramco provided for financing the Rabigh Phase 2 refinery and petrochemicals complex project had been terminated as of Sept. 30. In 2015, Petro Rabigh signed project financing agreements with a syndicate of banks to receive an aggregate loan of \$5.2 billion to cover 60 percent of the cost of the project in Saudi Arabia. The parent companies each offered financial completion guarantees



for 50 percent of the loan at the time, but they have been lifted as they have fulfilled the requirements for continuous performance and debt-repayment ability, Sumitomo said. Petro Rabigh started the scheduled repayment of the debt in June 2019 and will continue to repay the balance of the loan out of cash flow generated from its operations, Sumitomo said in a statement.

Shell to cut up to 9,000 jobs as virus accelerates overhaul

Royal Dutch Shell plans to lay off as many as 9,000 workers as the coronavirus pandemic continues to depress crude demand and as the oil major pivots its business to more sustainable energy sources. The Netherlands-based oil and gas company on Wednesday said it will cut between 7,000 and 9,000 jobs by the end of 2022, which represents about 10 percent of its workforce of 87,000, and include 1,500 voluntary departures. Shell did not disclose how many layoffs are planned in Houston. The company employs about 8,000 people locally, according to Chronicle research. «This is an extremely tough process,» Shell CEO Ben van Beurden said in a statement. «We have to be a simpler, more streamlined, more competitive organization that is more nimble and able to respond to customers.»

Chevron to sack 25% of its workforce in Nigeria



Chevron Nigeria Limited has announced that it will be reducing its workforce by 25% as it is reviewing its manpower requirements in light of the changing business environment. The disclosure was made by Chevron

Nigeria Limited on Friday, October 2, 2020, in a statement titled 'Chevron Nigeria Limited reviews workforce in accordance with business exigencies'. The American oil major said it would continue to evaluate opportunities to improve capital efficiency and reduce operating costs. The General Manager Policy, Government and Public Affairs of Chevron Nigeria Limited, Esimaje Brikinn, said, "The aim is to have a business that is competitive and have an appropriately sized organisation with improved processes. This will increase efficiency and effectiveness, retain value, reduce cost, and generate more revenue for the Federal Government of Nigeria." According to him, the new organizational structure will, unfortunately, require approximately 25 per cent reduction in the workforce across the various levels of the organisation.

Total sees oil demand peaking around 2030 as world goes green

Total SE joined the ranks of oil companies anticipating a peak for the industry in the coming decade, saying demand growth will end around 2030. While the French energy giant's analysis is more conservative than that of BP Plc, which earlier this month said the era of oil-market growth was already over, it adds to the chorus of executives and investors predicting rapid change for the industry. Energy demand increased in all the scenarios considered in Total's Energy Outlook report published on Tuesday, but most of the gains were seen being satisfied by low-carbon power. Electricity will comprise 30 percent to 40 percent of final energy demand in 2050, up from 20 percent today, it said. The outlook was better for the company's other main product, natural gas, which is expected to play a key role in energy markets for decades to come as a less carbon-intensive bridge fuel. Total and its European peers are channeling investment into clean energy such as solar



and wind, battery technology and car-charging networks. While investors in BP and Royal Dutch Shell Plc appear skeptical of the transition, particularly after suffering big dividend cuts earlier this year, Total has so far avoided any big stumbles.

Exxon lines up bidders for aging U.K. oil, gas fields



Exxon Mobil Corp.'s U.K. North Sea assets have attracted suitors from state-owned companies to private equity-backed firms as the U.S. oil giant seeks to exit the aging region altogether, according to people with knowledge of the matter. China Petroleum & Chemical Corp., Kuwait Foreign Petroleum Exploration Co. and the U.K.'s EnQuest Plc are among bidders, the people said, asking not to be identified as the process isn't public. Exxon started the sale in July following delays caused by the spread of the coronavirus and slumping oil

prices. Tailwind Energy, whose equity partner is commodity trader Mercuria Energy Group, also submitted a bid, as did NEO Energy and Siccar Point Energy Ltd., according to the people. Newcomer Viaro Energy, which recently acquired North Sea company Rockrose Energy Plc, is involved in the process as well, two people said. Exxon is offering its stake in 15 fields, which are expected to produce 37,000 barrels of oil equivalent a day net to the company this year, according to marketing documents seen by Bloomberg. Stakes in pipeline infrastructure as well as two exploration areas are also up for grabs. The sale builds on Exxon's retreat from Europe as part of a multibillion-dollar global divestment plan and a renewed focus on U.S. operations. The company exited Norway last year, selling its assets to Var Energi AS for \$4.5 billion. Exxon previously said it's "exploring market interest for a number of assets worldwide, including its interest in non-operated assets in the U.K. central and northern North Sea." It had no further comment to add for this story. Sinopec and EnQuest declined to comment, as did NEO Energy and Viaro. Kufpec didn't immediately respond to requests for comment. Tailwind Energy and Siccar Point also didn't respond. Binding bids are due in October, and the deal is expected to close in the first quarter of 2021, the people said.



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شركة السويس لمهمات السلامة المهنية



الـ Safety

عقدت الجمعية العامة لشركة السويس لمهمات السلامة المهنية في الثاني من ابريل 2020 برعاية السيد المهندس/ عابد عز الرجال - الرئيس التنفيذي للهيئة المصرية العامة للبترول وبرئاسة السيد المهندس/ حازم لطفي - رئيس مجلس الإدارة والعضو المنتدب وبتشريف السادة نواب ومساعدي الرئيس التنفيذي للهيئة والسادة مساهمي الشركة وأعضاء مجلس الإدارة، حيث حققت الشركة إيرادات بلغت 125 مليون جنيه وهي ضعف ما تم تحقيقه خلال عام 2018 و بأرباح بلغت 12.1 مليون جنيه وذلك بمثابة حوالي 10 أضعاف المحقق خلال عام 2018، الأمر الذي كان له المردود الإيجابي على الشركة والذي يرجع أسبابه إلى ما تلقته الشركة من دعم السيد المهندس/ عمالى وزير البترول و الشروة المعدينية والسيد المهندس/ الرئيس التنفيذي للهيئة والسادة / مساهمي الشركة والساسة / أعضاء مجلس الإدارة وتكلف جميع العاملين بالشركة.

وقد أشادت الجمعية العامة بالإجماع بالنتائج المحققة من الشركة وصرح السيد المهندس/ الرئيس التنفيذي للهيئة أن هنا يعتبر بداية ويميلاد جديد للشركة، لأنّه ولأول مرة تجتمع الجمعية العامة لمناقشة النتائج المحققة من الشركة بهذه الأرجيحة وذلك نتيجة لاستمرار الشركة في إتباع المسار السليم والذي وضح جلياً من خلال تحقيق أرباح للعام الثاني على التوالي وبدأ ظهور رأس المال العامل بالمحظى لأول مرة منذ إنشاء الشركة ، ومما لا شك فيه أن شركة السويس لمهمات السلامة المهنية هي واجهة قطاع البترول وتستمد أهميتها من أن قطاع السلامة هو الشغل الشاغل حالياً للقطاع وسيبله في ذلك توفير مهمات السلامة والصحة المهنية بجدية وكفاءة عالية. كما أشاد سعادته بقدرة الشركة على التغلب على مشاكل الماضي التي كانت سبباً في عرقلتها وهما الجودة ومواعيد التوريد.

والجدير بالذكر انه جاري اتخاذ الإجراءات المطلوبة لتصنيع **الكمامات الوقائية** للمساهمة في توفيرها لشركات قطاع البترول وفقاً للمواصفات التي أعلنتها الهيئة المصرية للمواصفات والجودة لمواجهة فيروس كورونا المستجد COVID - 19 .

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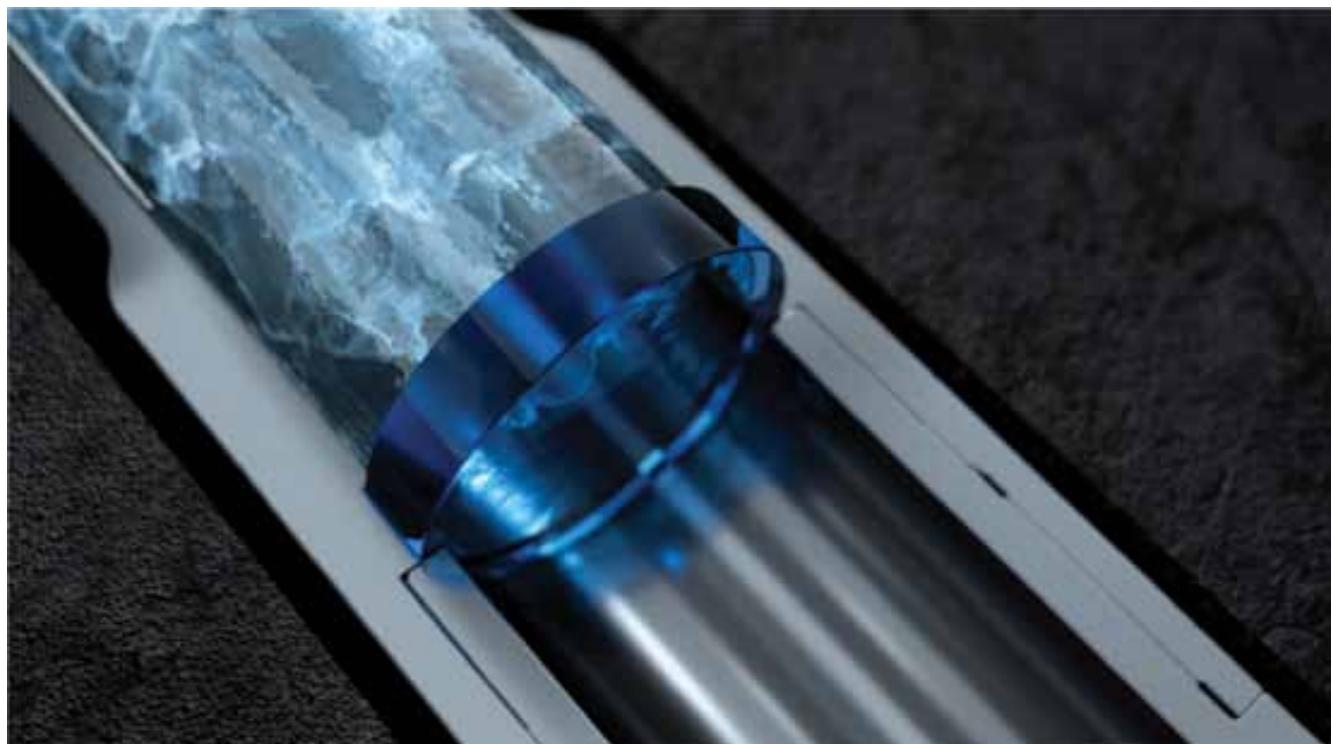
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Casing Flotation Device Adds Recoverable Gas Value in Appalachian Basin Well



[Fig (1) Nine's BreakThru™ Casing Flotation Device]

Nine's BreakThru™ Casing Flotation Device allows operators to reach TD by eliminating components added to the casing string commonly used with conventional techniques. The highly engineered plug in the BreakThru Device uses an engineered material barrier, integral in a mechanism to shatter at a precise differential pressure. At the activation pressure, the barrier disintegrates into sand-like particles, easily circulated out, leaving a full bore casing string. This eliminates the need for a debris trap and significantly shortens the shoe track. When run in combination with the Nine Energy approved float shoe, the BreakThru device significantly reduces the weight of

the casing in the increasingly longer horizontal sections, reducing the risk of not getting the string to TD. Prejob modeling software determines the position of the BreakThru device in the casing string and pressure activation values. In wells where the tool has been run, there has been 99.9% success in casing reaching TD.

The device is manufactured to perform. It is made from high-quality, ultradurable engineered material, which can withstand extreme downhole temperatures and loads. Once the string is landed, pressure up to the activation pressure and the plug disintegrates, leaving the bore ready for cementing.

High Active Aqueous-Based Pour Point Depressants and Wax Inhibitors

Paraffins present in crude oil can gel or precipitate, which can cause pipeline and production system blockages. These flow assurance challenges can result in production and process downtime and increased frequency and costs of workover operations.

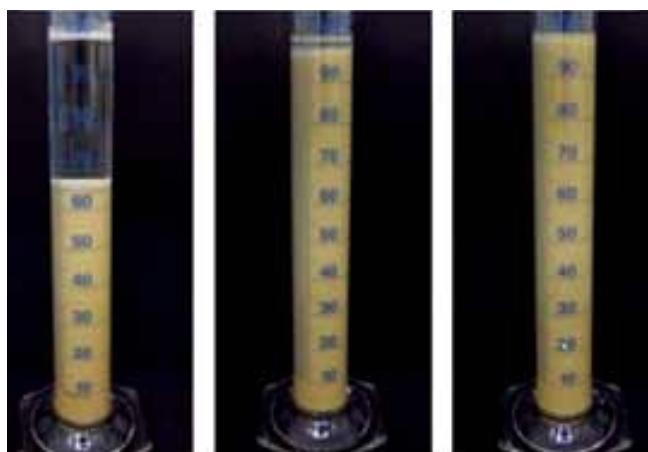
The oil and gas industry have relied on conventional wax inhibitor chemistries, which have limited solubility in organic solvents—leading to extremely low active concentrations and requiring high dosage rates in treatment formulation; this could result in higher Opex direct and indirect costs.

Dow's ACCENT wax inhibitors are high-active, aqueous-based chemistry, that efficiently control paraffin deposition in pipelines, with up to three times the active ethylene vinyl acetate component, resulting in lower dosage treat rates.



[Fig (2) Dow's ACCENT Inhibitors]

Novel Stimulation Additive Assists in Hydrocarbon Recovery



[Fig (3) BYK-GO 8730 Stimulation Additive]

As global demand for hydrocarbons continues to grow, the need for efficient and improved recovery of oil and gas is crucial. The use of additives plays a critical role in the hydrocarbon supply chain from drilling to refining. In recent times, many stimulation applications in oil production have been moving towards «particle-free» systems in order to prevent a reduction in permeability or the blocking of pores in the formation. In addition, there are many polymers in oil dispersions such as CMC, dry friction reducers or guar slurries that require anti-settling properties to ensure safe storage, transport and use. With BYK-GO 8730, BYK is launching an innovative liquid rheology additive into the oil and gas market, which gives anti-settling properties to a broad particle spectrum in oil system. In addition, the processing time is reduced considerably which significantly simplifies the preparation time for the user. Furthermore, it is liquid and pourable over a very wide temperature range and ensures low shear viscosity in oil-based systems.

Four Areas Flow Assurance Can Help Reduce Cost and Increase Revenue

Flow assurance provides value throughout the entire oil and gas production value chain. Ensuring an uninterrupted flow of hydrocarbon fluids from the reservoir to delivery is key for your operation and profitability.

Flow assurance issues—from hydrates and wax, to low temperatures and

corrosion—can result in production and process downtime, safety incidents and loss of revenue. If flow assurance risks are understood and addressed early in the project life, significant OPEX can be avoided.

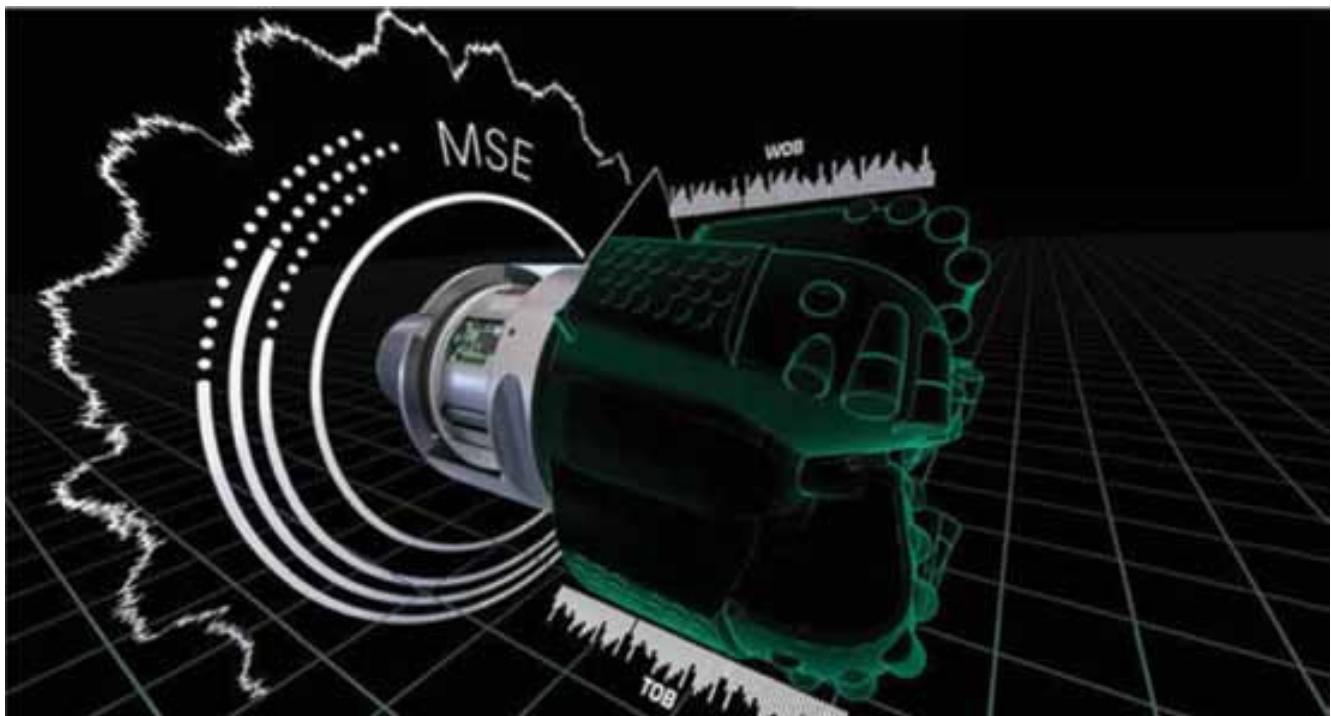
We've put four key ways of how to manage and improve flow assurance under the spotlight in this white paper,

to help you maintain hydrocarbon flow.

Key areas for applying flow assurance techniques

- Area 1 Engineering Design
- Area 2 Infrastructure/ Integrity Management
- Area 3 Life of Field
- Area 4 Operations Support

Halliburton releases drill bit sensor



[Fig (4) Halliburton Cerebro Force™ in-bit sensors]

Halliburton has introduced Cerebro Force™ in-bit sensors, a first-of-its-kind technology that captures weight, torque and bending measurements directly from the bit to improve understanding of downhole environments, optimize bit design and increase drilling efficiency.

Built on Halliburton's successful in-bit vibration sensing platform, Cerebro Force utilizes downhole data to reduce or eliminate surface measurement uncertainty and inefficiencies caused by bit design, bottomhole assembly and drilling parameter selection. Through the Design at the Customer Interface (DatCI) process, Halliburton's local network of drill bit experts, collaborate with operators to customise bits for

basin-specific applications, and will use data from Cerebro Force to inform new designs and optimise parameters for efficient and precise drilling.

The technology is available on fixed cutter drill bits and is compatible with conventional motor and rotary steerable drive systems.

An operator in West Texas recently deployed Cerebro Force to improve directional control while drilling the curve portion of its wells. Cerebro Force data identified several issues that limited performance, and Halliburton developed a mitigation plan that optimised drilling practices and BHA design. This reduced the time to drill the curve section by 38%.

Seeing Inside Wells

DarkVision has developed the world's most advanced downhole imaging solution that effectively gives oil and gas operators the ability to see inside their wells. The system uses a variety of proprietary ultrasound technologies the company has developed and packaged into its first downhole tool.

The company has spent years developing a new ultrasound-based imaging technology that can image an entire multi-kilometer long well at a sub-millimetric level. The tool can be deployed by either wireline, e-coil or tractor and performs a 360 degree scan of the well and its components.

The company's first tool is capable of

[Fig (5) DARKVISION Downhole Imaging Tool]



detecting and identifying a wide variety of downhole problems across a number of applications including:

- Production Tubing Defects
- Casing Corrosion/Erosion

- Sand Screen Damage & Plugging
- Perforations & Sliding Sleeves
- Connection Cracks and Failures
- Sand & Scale
- Obstructions & Fishing

T.D. Williamson introduces latest isolation innovation



T.D. Williamson (TDW) introduced its latest isolation innovation for the gas distribution market, the Polystopp Quick Connect system.

Lightweight and easy to use, it allows operators to isolate a polyethylene (PE) line twice as fast as other methods while preventing the damage associated with squeezing.

According to HT&P senior product manager Ryan Ragsdale, it takes less than 10 minutes to tap and isolate a pipeline with the Polystopp Quick Connect system. The technician can install the tapping, plugging and completion machines onto the valve in about 20 seconds each, and removal is just as fast.

“Faster isolation dramatically decreases job time and increases efficiency while preserving pipeline integrity, which maximizes value to the operator,” Ragsdale said. The Polystopp Quick Connect system is extremely lightweight compared to previous solutions. All components are made of aluminum, including the valve and tapping, plugging and completion machines. That makes it light enough for a one-person lift operation.

Polystopp Quick Connect technology allows TDW to meet the needs of the PE market with something the industry has never seen before.

“Because we understand that the gas distribution industry is truly a lifeline for everyday citizens, TDW is constantly looking to develop technology that will enable operators to enhance pipeline integrity and do it faster, easier and more safely,” Ragsdale said.

The Polystopp Quick Connect system is available worldwide for 4-inch through 8-inch pipelines up to 10 bar (150 psi). Technology for 12-inch pipelines will be available in the near future.

5G Technology Is Shaping The Energy Industry



Digitalization is reshaping the landscape in the energy sector. The need for higher energy efficiency, enhanced process control, and a better user experience is driving adoption of Internet of Things (IoT) devices, which in turn require advanced networking technologies to ensure a seamless exchange of data.

Utility-related communications are among the most demanding of IoT applications, with millions of devices needing to be wirelessly connected with an extreme degree of security and reliability. The fifth generation of cellular technologies (5G) seems to be shaping the future of the energy sector.

Let's find out how 5G differs from previous generations of mobile networks, what benefits it brings, and how to implement it for real-life use cases in the energy and utility sectors.

What is 5G?

The fifth generation of mobile networking technology, 5G works on the same principles as 4G. However, the new 5G NR (New Radio) air interface will have wider functionality than just mobile internet, providing a higher level of scalability and flexibility.

Broadly speaking, 5G can be defined in two ways. The first and more obvious is that 5G is the next generation of cellular technology following after 4G, with improved speed, lower latency, and the ability to connect more devices at once.

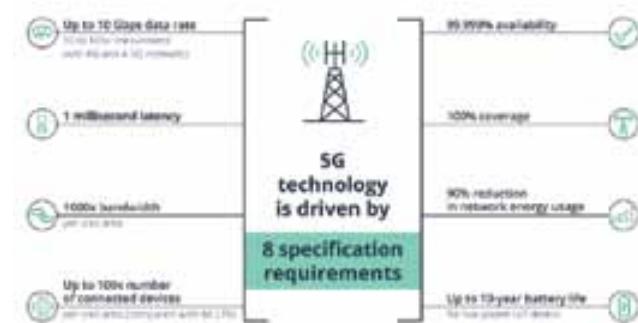
The second definition describes 5G as a new kind of service that combines the basics of GSM, 4G, Wi-Fi, and other innovative networking technologies to provide always-on coverage the likes of which have never been seen. From this point of view, 5G is not a simple cellular technology; it's a whole new vision created specifically to implement various IoT use cases and drive us closer to the smart city concept — not only to let you watch your favorite Netflix series much faster while on the bus.

5G and IoT use cases with deep mobile network deployment



Source: >Ericsson Mobility Report June 2019

For 5G and IoT use cases at the industrial scale, there are strict infrastructure requirements regarding connectivity and data transmission. Apart from the issue of how to increase bandwidth with 5G, early adopters are focusing on the following requirements for this new networking technology:



Source: Gemalto – Introducing 5G networks – Characteristics and use cases

Despite some differences in definitions, industry leaders agree that 5G will turn around the perception of mobile networks. For starters, 5G energy efficiency will cut costs, improve decision-making with data insights, and provide the ability to connect almost every device across vast distances, offering control over hard-to-reach facilities to prevent life-threatening events.

Industries that win the most from 5G



Source: Ericsson Report – The 5G Business Potential: Second Edition

New services that 5G will bring to various industries

5G will bring three new types of connected services, as defined by the SMARTER (New Services and Markets Technology Enablers) project by Yi-Hsueh Tsai of the Institute for Information Industry. The goal of SMARTER was to develop real-life use cases for 5G functionality and specify requirements for these new networks. The project identified 70 use cases grouped into five categories, which were later narrowed to three.

- Enhanced mobile broadband – 5G will provide faster data rates up to multiple gigabits per second. This will improve the user experience with faster downloads and allow for 360-degree video streaming, enable VR/AR applications, and address critical issues related to smart meter security. With 5G, broadband access will be available in highly populated areas both indoors and outdoors, city centers, office buildings, stadiums, and conference halls, as well as in moving objects like cars, buses, trains, and planes. A recent survey by Statista shows that 48% of respondents believe they will never again log on to public Wi-Fi when 5G services are available.
- Mission-critical control – 5G will enable new services which require extreme reliability and low latency, such as remote control of critical infrastructure, uninterrupted data exchange between autonomous vehicles, and real-time availability of robotics systems. For example, operators will be able to send commands to faraway devices or utility meters to change their configurations or control their performance with end-to-end latency down to a millisecond.
- Massive Internet of Things networks – 5G is expected to interconnect a massive number of embedded sensors — up to 50,000 per carrier — thanks to the ability to scale down data rates and transmit data much faster through new protocols with lower power consumption. This will allow users to control, support, and monitor equipment with a high density of units in urban areas and remote locations.

Categorization of 5G use cases



Source: Qualcomm – Making 5G NR a reality

Benefits of 5G technology you should use for your next solution

With the ongoing digitalization of services, 5G networks will lead the way to new business opportunities and meet evolving customer needs. New use cases will arrive faster than ever. As network speeds increase, more and more tasks

will be transitioned from the world of computers to the world of smart connected devices, opening new technological opportunities. A report from PSB Research states that 91% of respondents expect 5G to usher in new products and services never before seen.

Key 5G features and benefits

Feature	Benefit
Higher throughput	Higher individual-user speeds, but more importantly increased overall system capacity to handle greater user density, and resulting traffic demands
Reduced latency	Ability to handle time-critical traffic for IoT, streaming video, and applications with low tolerance for latency
Advanced management and DOA	Reduced operating expense for carriers and operators
High-resolution mobility	Ability to support users on rapidly-moving mobile platforms
Improved security	Always a requirement
New spectrum	Occupation of millimeter wave bands, radio-over-fiber aggregation
New enabling technologies	Massive MIMO, small cells, SDN and NFV implementations, improved power efficiency
Universal applications support	Support for every application from low-data-rate/low-latency to demanding, real-time graphical applications
Industry growth	Provides new incentives to attract customers and increase revenues

Source: NetworkWorld – 5G: A deep dive into fast, new wireless

Top 5G energy use cases you should keep an eye on

From the perspective of power supply, 5G will help distribute energy faster and more efficiently. Energy management companies will be able to collect data at up to 20 gigabits per second with latency rates near 1 millisecond. Coupled with advanced storage technology, this will allow energy suppliers to feed huge databases from smart sensors and know exactly when to distribute or redistribute power and in what exact amount, leading to a secure and stable power supply.

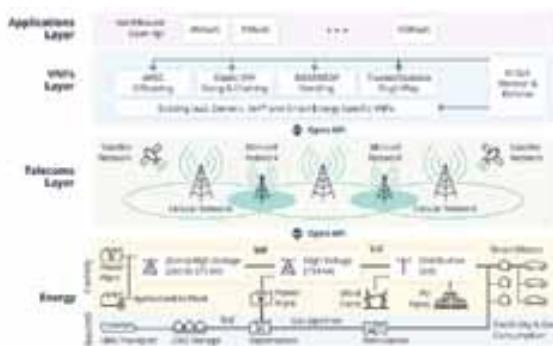
From the other end, 5G networks will need energy themselves, and other mission-critical systems will require their constant operation. This opens new cash flows for the energy sector as well. 5G and energy digitalization will generate new use cases within the energy industry, basically overlapping with IoT technology. Let's give smart cities a chance. Here are some use cases of 5G in the energy and utilities sectors that show how 5G will lead to fierce competition between the main industry players.

Smart grid technology

Fifth-generation wireless technology will pave the way for new features and more efficient smart grids. New 5G mobile networks will help integrate previously unconnected devices to new smart grids for accurate monitoring and precise forecasting of their energy needs. Managing energy demand will be much easier and more efficient, requiring fewer investments, as the smart grid will balance the energy load, reduce electricity peaks, and ultimately cut

energy costs. Large cities will be able to plan their energy infrastructure based on collected data, spending less and reducing downtime.

Smart energy grid framework



Source: Smart Grid – A demanding use case for 5G technologies

At the lowest layer, we see energy supplying infrastructure. The next layer includes the telecommunications network with mini-cells and a satellite network. The upper layer is a 5G architecture that consists of VNFs (Virtual Network Functions), existing IaaS (Infrastructure as a Service), smart energy VNFs, monitoring units, and a new applications layer with predictive maintenance and dispatchable demand response services. All layers are connected via open APIs, and this framework could be customized to the particular needs of an energy supplier.

Smart meters for private properties

Apart from industrial utilities, smart meters will enter our homes. This will allow private users to better understand which devices consume more energy and appropriately plan budgets. Smart meters are already in use in smart homes, and with 5G they will become widespread, while all measurements will be more accurate thanks to permanent and real-time data collection.

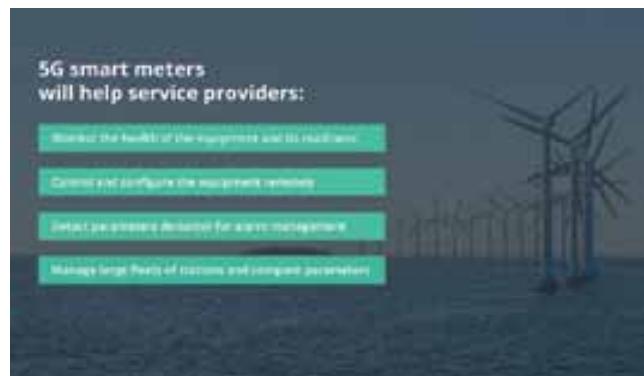
In-house deployment of smart meters



Source: ResearchGate – M2M Technology for 5G-Grade Home Automation

Remote equipment monitoring

Like connected smart utility meters, energy monitoring is nothing new. Still, with the introduction of 5G technology, energy suppliers will get more detailed data faster, with lower latency, and over farther distances. Let's take a wind farm as an example.



Digital data management

5G mobile networks will increase the demand for comprehensive data management strategies and the reliability of corporate systems. Organizations will need not only to maintain databases with large volumes of data but to be capable of receiving and working with data at higher speeds with zero risk of downtime. As a result, 5G will push businesses to eliminate their legacy data asset management systems and move to hybrid cloud applications applying microservice architectures for flexible and continuous application delivery.





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Load test

The API specification 8C determines the importance of performing a proof load test for handling tools equipment in the same manner as in actual service and with the same area of the contact I the load bearing surfaces

performing such load test is avoiding any suddenly cracks might happen while using handling tools with full capacity at rigs site, as the mentioned test is done at a workshop.

Testing elevators & handling tools loading capabilities up to 750 tons – Certifying the accepted tools- load test equipment has been adapted to test different types of devices as slings and shackles with different types and sizes.

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Blockchain Technology in the Oil and Gas Industry

APPLICATION STATUS

In the past two years, blockchain technology has begun to emerge in the oil and gas industry. Many energygiants have begun to invest in the development of thistechnology. Among them, BP and Shell are pioneers in blockchain application technology in the oil and gasindustry. At the end of 2017, Sinochem Group successfully completedChina's first blockchain crude oil import trading pilotproject from the Middle East to China. There are two major applications in the project - digital bill of ladingand smart contracts, which can significantly improve the efficiency of crude oil trading execution and optimize the transaction financing cost by 20% to 30%. In addition, the blockchain platform jointly developed by Abu DhabiNational Oil Company (ADNOC) and IBM will be the firstapplication of blockchain technology in global oil and gasproduction accounting. Unlike other projects, it willapply to the entire oil and gas life cycle, not just a criticalpart of the commodity supply chain. ADNOC expects to automate the transaction process through the platform, andby deploying advanced technology resources, it will reduceits drilling time by 30% in 2019 and achieve savings ofup to \$1 billion. The Table lists 12 major oil and gas industry blockchainprojects worldwide, and the Fig. summarizes the statusof these projects from the region and status. It can be seenthat as of mid-2018, most of the blockchain projects in theoil and gas industry are in operation and commissioning, andsome are in the testing stage. Europe has the largest number ofprojects, and Asia and Europe have the fastest developmentin the application of blockchain in the oil and gas industry. But overall, there are few blockchain projects in the oil andgas industry relative to other industries.

UNDERSTANDING LEVEL

From the perspective of understanding blockchain in theoil and gas industry, this report summarizes the followinginformation from the statistical records of 1053 respondentsin «Deloitte»s 2018 global blockchain survey»:

(1) 72% of respondents in the oil and gas industry believe that blockchain technology will have a big impact on theindustry;

(2) 61% of respondents in the oil and gas industry believe that the blockchain is only a currency database and can onlybe used in the financial services sector;

(3) Regarding the level of understanding, 87% of respondentsin the oil and gas industry believe that their understandingof the blockchain is «Excellent» rather than «Expert»(only two levels in this survey);

(4) In terms of investment in blockchain technology, 72%of respondents in the oil and gas industry invested between\$1 million and \$10 million, while only 9% invested morethan \$10 million. In contrast, 38% of respondents in theautomation field invested more than \$10 million in theirorganization;

(5) Only 15% of the organizations in the oil and gas industryhave applied the blockchain to production, while 84% areonly in the consciousness or experimental phase.

For another report, the World Energy Council interviewed39 people in the energy field in 2018 and releaseda report called «Is blockchain in energy driving an evolutionor a revolution?». They have a maturity modelbased on the interviewees» responses. It can be concludedfrom the two survey reports that the understanding of theblockchain by the oil and gas industry is not comprehensive enough, and the application of the blockchain isstill in the experimental stage. In addition, the oil and gasindustry»s investment in the blockchain is not strong enough.

OPPORTUNITY AND CHALLENGE

Due to the decentralization and transparency of the blockchain, it can bring many opportunities to the oil and gas industry. However, a new technology will inevitably encounter many challenges when it is first applied, as shown in Table.

RISK

Although the blockchain technology has many advantages, the current operating system is still not perfect, and there are many risks. Risks can be divided into operational risks, cyber risks, and legal risks. Operational risk means that if the blockchain is applied to the oil and gas industry, technical or social problems may produce bad results. It may be reflected in:

- Loss of data and identity.
- The transaction costs of the public blockchain are high.
- Lack of recipients and users.
- Lack of long-term experience leads to imperfect

management.

- Initial applications may have technical problems.
- Lack of a standardized mode of operation, function and security deficiencies.

Cyber risk refers to bad behavior such as fraud due to insufficient security or design flaws, it is reflected in:

- There may be fraud in the interface between the real world and the blockchain world.
- The exchange may be attacked by hackers, and the user's password may be hacked and funds transferred.
- The hard fork of the block will cause the trust of the entire network system to be questioned.

Legal risk refers to some illegal acts that may occur in the operation of block chains, it is reflected in:

- Tax evasion may be triggered.
- Illegal use of information.
- Blockchains are used for illegal transactions.

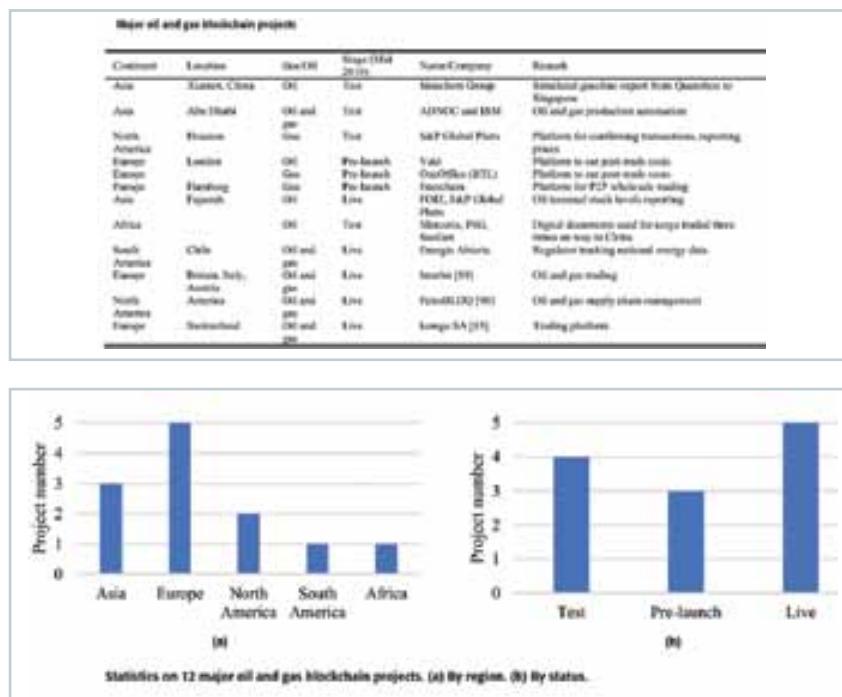


Table 1. Opportunities and challenges of blockchain in the oil and gas industry [35, 365-366].

Opportunities or challenges	Item	Class
Opportunity	Safe transaction costs, Transparency, price	Promoted the involvement of third parties, Reduced transaction costs
Challenge	Blockchain member, Data, Data management, Data transmission, Communication, Communication, High transparency, Standardized language, Legal issues, Integrity, Way of financing, Way of financing, Adapt to new model, Standard, Transparency, Technology security, and Data, Data quality, Data, Data quality, Standard	Companies will be more concentrated in business cognition and will reduce efficiency, A large quantity of documents, content, and processes are required, Decentralization, transparency and blockchain technology, Different languages, different cultural, historical, and geographical backgrounds, language, coverage extension in a cross-area, and facilitate the sharing of information, Data cannot be exchanged with oil and gas partners, operational costs, As the number of nodes in the blockchain increases, the cost of maintaining the system will increase, The introduction of blockchain will change the mode of operation of the oil and gas industry, and changing the mode of other related industries, it will take some time to adapt and overcome, for the majority of companies, the oil and gas industry is not yet able to use blockchain technology to complete difficult tasks in order to increase efficiency, As the application of blockchain technology to the oil and gas industry is still in its infancy, there will be many initial problems and costs associated, Supply-chain transparency, high efficiency business, and data sharing, the oil and gas industry can benefit from the use of blockchain, such as oil and gas exploration, transportation and management, revenue, privacy protection, smart contract, logistics, and other security issues, Oil is not legal as regulated, Framework risk, Blockchain technology can handle the quantity of data, but not only processing the absence of data, If blockchain technology is adopted, it will involve many management systems and databases that have been successfully applied in the oil and gas industry, The replacement requires much work, the transparency of technology, and easier innovation process, In the initial environment, block is not being preferable to blockchain application

Cooperation between Petroleum and Technology
balances production and confronts «Corona»

ARTIFICIAL INTELLIGENCE OVERCOMES THE COSTS OF THE PETROLEUM INDUSTRY AND REDUCES RISKS

On the twentieth of April 2020, Prices of US Petroleum contracts fell to their lowest level in history, exceeding zero, in parallel to the decrease in available storage space in the world, this is because of the abundant supply of Petroleum that global economies no longer need; As a result of the almost complete closure of many airports, ports, factories and companies, this is due to the Corona pandemic that hit the world, which led to a drop in global Petroleum demand to about a third.

However, the collapse of the world Petroleum prices due to the Corona pandemic and the enormous losses it caused in the Petroleum field portends the need to work on managing the current economic crisis, although the global Petroleum market has experienced many shocks over the years, the effects of any of them have not reached the core of the industry with that force witnessed by the Petroleum market, the economic impact of the virus on the Petroleum industry has spread through successive stages, this is due to the decrease in demand for oil, as factories closed and transportation was disrupted, and stores began to accumulate, as well as traders resorting to ocean tanker tankers to store crude Petroleum in the hope of improving prices in the future.

How technology supports the Petroleum sector before and after the crisis?

The Egyptian petroleum sector testifies that it worked on the development of the petroleum sector system before the crisis of «Covid 19», in line with Egypt's 2030 strategy for sustainable development. The Egyptian petroleum sector has consistently achieved the highest optimal economic benefit rates from natural resources, to contribute to the sustainable development of Egypt 2030, Turning Egypt into a regional center for Petroleum and gas trade and circulation, in light of keeping pace with progress Technology and support for digital transformation, and use of the Enterprise Resource (ERP) planning system; It is an information system that allows planning Managing companies and linking them together; This is to speed information exchange and facilitate decision-making, in addition to implementing resource planning programs via SAP (System Application & Products Data Processing).

Which works on resource planning and enterprise activities which was developed by the German company (sap SE) in 2006, Which the company can manage its financial activities, manage human resources, and limit the use of paper transactions, the availability of a single source of information, which increases the accuracy of reports and speedy completion of transactions.

Technology developments have enabled the energy sector to reach new sources of natural gas and oil; To meet worldwide demand, innovation also helped mitigate the environmental impact of energy production by allowing more gas and Petroleum to be produced using fewer wells.

As companies work to revolutionize the business through their range of digital projects that include gas and Petroleum exploration sites, which helps them determine the sites where they will sell the products.

Although the energy sector was the area that witnessed digitization at a slow pace relatively speaking, however, digital transformation and radical change are now at the forefront all the exhibitions, conferences and symposia that are held in the Petroleum and gas industry anywhere in the world.

Since the Egyptian Ministry of Petroleum announced



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its plan to maximize the benefit from technology the digital transformation, development and modernization of the petroleum sector, which spares no effort to keep pace Consecutive technology developments; And work to employ them to move forward towards payment Egypt to become a regional energy center, and the speedy start of implementing programs for qualifying human cadres, and using software to use in various activities of the sector, and raising the efficiency of refineries and immediate data analysis, which enhances the issuance of accurate reports to support decision makers, and to promote occupational health and safety, as well as developing databases of workers in the sector, training programs, and financial databases, through improving citizen services and working to provide the best solutions to problems, and to maximize take advantage of the databases of investors and suppliers to facilitate procedures.



Artificial intelligence reduces the costs of the Petroleum industry

International companies considered artificial intelligence a solution to the huge cost problem that could hinder the growth of its hydrocarbon extraction activities, and among those problems for example, is a pump malfunction in a drilling rig in the North Sea, which BP was exposed to at the time, the company soon managed to solve the pump problem by installing an artificial intelligence software that monitors data from sensors connected to it to predict any malfunction or malfunction before it causes the drilling operations to stop, which means that engineers and technicians intervene quickly to tackle the problem from its roots before the crisis occurs.

Hence the deepening cooperation between the energy and technology sectors, as BP used the spark cognition of artificial intelligence software to solve the pump problem, and data in the Petroleum and gas industry such as Exxon Mobil revealed a partnership with Microsoft to use artificial intelligence software in Operations in the Permian Basin in Texas, and ExxonMobil also used artificial intelligence

software in its various activities to obtain information from the sensors capable of tracking refineries.

It is worth noting that the company «Total» cooperates with «Google» to interpret geological database seismic activities, and the energy company plans to increase its investment in artificial intelligence to produce more hydrocarbons.

Royal Dutch was not in isolation from current developments, as it tested artificial intelligence to monitor its operations at the largest Rotterdam refinery in Europe to improve maintenance operations and reduce costs, as well as contribute to reducing the cost of charging electric cars in California.

Giant information management caused by machine communication:

One of the capabilities that the Internet of Things distinguishes is the ability of machines to communicate with each other. Machine To Machine Communication challenge shows In this field, if the volume of data and information increases, as a result of the expected increase in the volume of Internet of Things users, which organizations are expected to go towards inevitably dealing with this problem by collecting data in small distributed centers so that information can be processed.

How big data contributes to the Petroleum industry.

Machine learning technologies have evolved and the cost of storing data has decreased, prompting energy companies to take advantage of artificial intelligence capabilities, and since 2017, Petroleum and gas production companies have tended to take advantage of superior technology software.

Petroleum and gas companies are targeting massive data from intelligence sensors artificial analysis of its activities and the prediction of malfunctions and problems, and work to solve them mapping of maintenance and exploration and more efficient and less expensive databases.

ExxonMobil said it has a database of five trillion points providing it with data at refineries and chemical processing plants around the world, and it has information on the

volume of crude flow and how to maximize the quality of its products.

What does artificial intelligence represent for the Petroleum and gas industry?

Artificial intelligence is a rich and varied scientific field, but in terms of it in the Petroleum and gas industry, we find two main applications: (Automated education / data science) and artificial intelligence has turned practically all problems in the Petroleum and gas industry.

There is a huge amount of data in the Petroleum and gas industry, and it has become difficult to deal with these large quantities, and extract the general information necessary from them to build

Future strategies, and here comes the role of machine learning; All systems are allowed computing is learning how to handle and interpret data in this industry without human intervention, machine learning also helps Petroleum and gas institutions far from their centers the main is to control issues, internal procedures, deal with them, and solve problems the large one that cannot be simplified by relying solely on human assistance.

Machine learning is also an important application of artificial intelligence in the Petroleum industry gas, where simulation process procedures help, and predictive analysis operations on data models and environmental risks measurement for new projects.

Artificial intelligence can be used in data science by Petroleum and gas institutions away from its headquarters, to increase access to complex exploration information about Petroleum and gas and get it.

Dr. Said Kamel, professor of Petroleum and gas production and economics, said that the data revolution and artificial intelligence has now become one of the most important and independent production systems that are automated by computers and robots that learn from what is happening, and reprogram themselves, especially in the Petroleum and natural gas industry, which helps the adoption of artificial intelligence technology to improve the efficiency of technical decisions, reduce costs and avoid errors resulting from Human intervention throughout the industry from

exploration and drilling, field development and production from refining to the distribution of petroleum products for final use.

This will lead to a significant development of drilling and production operations; It will save the human effort and risks to the drilling team, so everything can be monitored immediately

Anticipate problems before they arise and take an immediate reaction that depends on what is recorded of the data, which saves a lot of time to dig the well and thus greatly reduces costs.

The big data analysis technology has opened unimaginable horizons, but what has happened so far has improved efficiency dramatically. For example, a data analysis company, totally unrelated to oil, analyzes data for an entire region in which dozens of companies operate, and finds that The productivity of wells in some areas was lower than around them, which indicates that more of them can be extracted, and an analysis of big data from technology can infer a better and more appropriate conclusion by region, which is information that was not available before, but for new areas, it can be used Advanced technology for photographing the underground and knowing where the reservoirs are, much more accurately than before, which reduces costs significantly and increases the efficiency of capital and workers. This means that the Petroleum companies that adopt this technology will be able to bring more Petroleum to the world, and reduce risks.

In the field of Petroleum trade, adopting the «block» chain technology will solve many problems in the petroleum industry, companies will be able to track their shipments everywhere, they will organize the inventory better, the traditional contracts in the Petroleum market will end and they will be smart contracts that will adapt to changing situations and conditions dependent on data analysis.

In the field of human resources management in the petroleum sector, the job of the data analyst and its programming will have a very important role, to keep pace with this development in the field of big data and the methods of analyzing it, and to train engineers in the role of data analysis in cooperation with International companies.



Egypt Signs East Mediterranean Gas Forum Charter

Egypt has signed the East Mediterranean Gas Forum's (EMGF) charter, making it a formally established international organization that unites gas producers and importers.

In a teleconference, Egypt hosted the signing ceremony of the EMGF, with the participation of seven ministers from different countries across the East Mediterranean region.

Originally, the bloc was an informal forum of Egypt, Cyprus, Israel, and Greece. Major companies, such as Total, Eni, Novatek and Exxon, have signed exploration and production agreements. Representatives of Palestine and Jordan have attended the meetings of the EMGF. On 16th Jan. 2020, the EMGF became an international body. Subsequently, France and the United States asked to join the forum, as a member and permanent observer respectively.

Egyptian Minister of Petroleum Tarek Al-Molla praised the forum during the teleconference, calling it a major breakthrough that will help optimize member states' oil and gas reserves while establishing solidified dialogue and cooperation between them. Al-Molla further praised the EMGF for finalizing the charter in a record 20 months

despite global circumstances.

In addition to France, who witnessed the signing of the charter, the EMGF is supported and recognized by the European Union, World Bank, and the United States.

The forum, which excludes Turkey, said they are open for any membership submissions by any other state within the Eastern Mediterranean, with minister Al-Molla noting the organization's willingness to welcome other countries given that they share the same goals and condemn any acts of violence.

This comes right after Greece and Turkey's conflict over energy claims in the Eastern Mediterranean, with Ankara announcing it would expand its search for gas resources near the disputed region.

Tensions continued to escalate when Egypt signed a maritime demarcation deal with Greece which establishes an exclusive economic zone between the two countries. However, talks between Greece and Turkey over the disputed zones are expected to continue after Ankara pulled back an oil and gas exploration vessel near the shore of Crete.

Zohr Offshore Pipeline

Buckle Arrestor SSC Testing & Mitigation

By: Hesham Hussein, Enppi; Hesham Elkhafif and Shady Badran, Petrobel

Abstract
Zohr subsea production system (Accelerated Start Up Phase) is made by 6 wells connected via individual rigid production infield flowlines to two chained Main Subsea Structures. Gas is exported to onshore ElGamil plant through a piggable export sealine connected to the one of the two Main Subsea Structures.

In total 218 km of pipes 30inch to Zohr onshore plant El Gamil pipeline. Pipeline material and dimension combination required for the Zohr project is unique in its kind and the combination of requirements has not been produced before, with demanding mechanical and corrosion tests and a new limit for pipeline exposed to sour service.

A certain number of Buckle arrestors (107 pieces) have been used along pipeline installation. The BAA are around 12 m long and are integrated by three sections; The central sections of thickness (75.8, 66.0 and 54.0mm) are seamless forged pieces produced with ASTM A707 Grade L5 Modified steel in quenched and tempered condition with mechanical properties equivalent to API 5L L415QS / L415QO material. The puppiec es are API 5L LSAW pipes Grade L415MS / L415MO.

During Manufacturing Process Qualification Testing (MPQT) Sulphide Stress Cracking Corrosion Test (SSC) have shown some cracks of test specimens. The specimen fails and SSC cracks were found in the post test analysis, i.e., by sectioning and performing metallography at X100. These specimens were tested in NACE TM0177 type A solution with 5% NaCl and 0.5% acetic acid, saturated with 1 bar H₂S at an initial pH of 2.7. Exposure duration was 720 hours and the load to be applied was 90%. No indications or defects were assessed by NDT magnetic particle inspections on all the tested specimens.

Weld overlay of buckle arrestors assemblies (BAA) with alloy N06625 (nominal thickness 3 mm) cover the full length

of the central section plus the circumferential welds (that are ground flush) and extending 100 mm on each side of the girth welds into the pup pieces.

It was a challenge to overcome these defect of these pipes considering the stringent requirements in the project specifications and the tight project schedule to achieve the installation campaign without any delay on project schedule.

The Optimized Ramp-Up phase envisages an extension of the Accelerated Start Up subsea system with four (4) additional wells, a new Main Subsea Structure (MSS3), a new Subsea Distribution Unit (SDU) and a piggable export pipeline (30» OD), parallel to the 26» Accelerated Start Up Phase (ASU) export line.

Keywords: Corrosion testing, Pitting, Crack, SSC, Weld overlay, Coating, Installation

Introduction

The Shorouk Offshore Block is located in the East Nile Delta offshore and belongs to the East Mediterranean Basin. The selected development concept is based on subsea production systems, one control platform and an onshore treatment plant. Two production clusters connected via crossing manifold with the gas export lines to shore. Export line is 30inch along with 218 km of pipes 30inch to Zohr onshore plant El Gamil pipeline.

For the development of the Zohr field, the following principles, approaches and philosophies shall be considered during the design:

- high integrity approach shall be considered for the subsea production system for 25 years design life;
- the design shall be intended to minimize any maintenance, inspection and repair activities, in particular for the subsea items and structures;
- sufficient flexibility and robustness shall be included in the design to possibly manage some, limited variations with

respect to the field data or future field development.

The calculations carried out with corrosion models allow the use of carbon steel material provided that 6mm corrosion allowance is adopted and the fluid aggressiveness is mitigated by continuous corrosion inhibition injection. Such selection is also supported by having most water condensation along the flowlines and the limited quantity of formation water expected (calculations are based on full wet conditions), which further reduce the wall thinning risk.

Corrosion testing is used daily to simulate or screen materials for their intended application environment over extensive periods of time. When testing Buckle Arrestor forged piece in standard laboratory test environments for susceptibility to corrosion in its intended application.

This paper covers the laboratory testing and forensic analysis of testing used extensively in the oil and gas industry to evaluate resistance of metals to sulfide stress cracking (SSC).

The surface of the specimen to be exposed to the environment in service is stressed in tension and the other surface in compression. The test is carried out for a specified exposure period with the specimen held under constant displacement using compact loading jigs. Despite the apparent simplicity of the test there are many factors that can influence the test results.

Buckle arrestor is mandatory for offshore installation Deepwater to avoid buckling of pipeline during installation phase. It was challenging to overcome the consequence of SSC test results and to avoid any delay for project offshore installation campaign and production.

Buckle Arrestors - Installation Vessel

For deep water large diameter pipelines, it is not practical to design the pipelines with sufficient wall thickness to prevent propagating collapse failure. Instead, a series of buckle arrestors should be installed at intervals along the pipelines, each sufficiently robust to stop propagation buckling, which limits the extent of the damaged pipeline under such circumstances. It should be noted that buckle arrestors do not prevent buckle initiation, but limit the distance to which a buckle may propagate.

It shall be noted that all pipeline wall thicknesses are selected to prevent depressurized system collapse in accordance with DNV OS-F101. Thus, the buckle propagation during depressurization could possibly be initiated by other external loadings during an unexpected event (e.g. drop object or over bending during installation). Therefore, the buckle arrestors are designed to prevent propagation buckling during such incident.

For the 30» Export Pipelines the BA thickness was optimized along the routes and it was calculated based on maximum

water depth along the pipelines sections.

Buckle arrestors are basically cylindrical rings with larger thickness than the linepipe. Thick Wall PipeJoint arrestors are a special pipe sections that is designed to prevent collapse propagation. It is welded into a pipeline at defined intervals. A Thick Wall Pipe Joint is essentially a long integral ring arrestor, with more amount of steel is required. This type of buckle arrestor is fabricated with a taper length at both ends to reduce the stress concentration factor.

The spacing between BA for Long Pipelines is taken as one catenary of minimum water depth along the sections pipeline route; to minimize the length of pipeline to recover in accidental event of buckle.

The design of the vessel is based on the requirements of laying pipelines with high productivity, preferably trunk lines of large diameter, at both shallow and deep water, together with fully dynamic positioning capability and with large pipe storage capacity coupled with on board prefabricating facilities. The CastorOne was used for Installation of the deep section of the 30inch gas export pipeline Main features of the vessel are listed here below:

- Capability of fabrication on board 3x12m TJ and 2x12m DJ (adjustable for 2x18m DJ fabrication for special cases).
- Laying 3LPE/concrete coated pipes.
- Laying bulky items in S-lay (before and after tensioners).

Mobilization and booking for the installation vessel have been agreed which includes a high cost for daily rate have been planned with all supplying services vessels to be sure installation campaign is going as scheduled based on delivery plan for the pipeline and buckle arrestor fully coated.

The Buckle Arrestor

The Buckle arrestor required for the Zohr project is unique in its kind. The combination of requirements has not been produced before. The BAAs are around 12 m long and are integrated by three sections: a central section of thickness (75.8, 66.0 and 54.0mm) and in the sketch and two end sections (pup pieces). The end sections are circumferentially welded to the central section. The central sections are seamless forged pieces produced with ASTM A707 Grade L5 Modified steel in quenched and tempered condition with mechanical properties equivalent to API 5L L415QS / L415QO material. The pup pieces are API 5L LSAW pipes Grade L415MS / L415MO.

Manufacturing Procedure Qualification Testing (MPQT)

The production is qualified by an extensive Manufacturing

Procedure Qualification Test (MPQT). It has to be performed on two heats for each wall thickness and/or welding procedure (WPS) individually. Each MPQT comprises more than 60 mechanical and corrosion tests in unaged and – to simulate the coating process – aged condition. The tests with the longest duration are the corrosion tests for SSC (1 month = 720 h).

SSC testing is done according to NACE TM0177 type A solution with 5% NaCl and 0.5% acetic acid, saturated with 1 bar H₂S at an initial pH of 2.7. Exposure duration was 720 hours and the load to be applied was 90%. No indications or defects were assessed by NDT magnetic particle inspections on all the tested specimens.

During the qualification process, SSC testing Specimen examination is carried out by metallographic sections of the FPBT, metallographic analyses shall be performed on polished sections up to X100 magnification to characterize/check possible cracks presence. The specimen fails SSC cracks were found in the post test analysis, i.e., by sectioning and performing metallography at X100, while visual and stereomicroscopy observations before sectioning are used as a reference for possible defect positioning for in-depth analyses at X100 in those locations. This occurred just two (2) months before installation campaign start where booking of vessels and planning for startup have been agreed. Any delay on installation campaign would affect the whole project and it was challenging to achieve the target without affecting the integrity and the production.

Material & Test Preparation

Three FPB specimens (115 x 15 x 5 mm) were machined from the forged Buckle Arrestor (BA forging) side of the girth weld connecting on one side the LSAW pipe and, on the other side, the forged buckle arrestor (heat 170862). These specimens were taken longitudinally from Inner Diameter (ID) with respect to the pipe axis.

Test specimens were marked using a vibratory stencil on each end with the following identification number ID-BA5; ID-BA6; ID-BA7. One spare specimen (ID-BA8) was machined and used for the calibration procedure in order to evaluate the displacement to apply the fixed level of stress.

Surface roughness, evaluated in three positions over the entire length is reported in Table 1.

Specimens were free from defects, as shown by magnetic particles inspections, performed before exposing the specimens in the environment.

Post Test Analysis & Evaluation of Sulfide Stress Cracking (SSC)

In the present section, the summary of the finding from

observations are reported, as well as details from the most relevant or representative cases useful to indicate the general outcomes of the testing.

■ Magnetic particles inspection

Specimens were free from defects or any indications, as shown by magnetic particles inspections performed by the end of test exposure, after performing surface cleaning according to ASTM G1.

■ Stereo- Microscope inspection (10X)

Corrosion deposits were visible by SM inspection on specimen surfaces. As shown in figure 6 elephant skin corrosion was detected on all specimens.

■ Optical Microscope inspection (100X)

Sections at $\frac{1}{2}$ and at $\frac{1}{4}$ width were prepared and observed by optical microscope. Surface defects were assessed and their depth was measured. The defects with the highest depth were recorded. The depth was measured at a proper optical microscope magnification. Micrographs relevant to representative field and worst field (containing measured defects) at 100X magnification were achieved.

Technical Evaluation

There is no formal guidance in standards for the differentiation between sharp pits and cracks. This is the subject of ongoing debate in the national and international Oil & Gas Community. The only reference based on EFC16 International Standard and based on measurement (i.e. not on SSC indications' interpretation) with a limit of 0.1 mm = 100 μm : A crack has a sharp tip, has parallel sides and is greater than 100 microns in the through thickness direction. This depth is measured from the surface for a surface crack and measured from the base of a pit for a pit-induced crack.

Even, if taking into consideration the acceptance criteria of EFC 16; a technical debate to evaluate the measuring of each pit or crack and to be sure it will not exceed 100 μm . Different opinions of the point of start to measure each pit

Technical Solution and Way Forward

In order to complete the installation campaign and starting production from Zohr project, using buckle arrestors for installation of pipeline was mandatory and shall be used. There was less than two (2) months to start of vessels & fleets mobilization for pre-production testing.

After reviewing all the possible scenarios, two different conceptual alternatives were shortlisted:

a. Start again with a new material

b. Additional weld overlay operation to be applied for existing material

Alternative (a) appeared to be considerably longer and with uncertain results, as challenges of new additional processes, new suppliers qualification, demanding logistic, and compression of the timing.

Fast track recovery plan was established in order to keep up with the project and offshore installationschedual. Alternativly plan (a) would have been exposed to more delay and cost to installation vessel stand-by.

Weld overlay using Inconel material Alloy N06625 have been proposed as a solution and way forwardwhich will have a cost impact and time schedule for overlay welding qualification and production. N06625 (nominal thickness 3 mm) cover the full length of the central section plus the circumferential welds (thatare ground flush) and extending 100 mm on each side of the girth welds into the pup pieces shown on figure9. The clad layer thickness shall be 3mm min. deposited with a minimum of two weld runs.

Qualification of Main Welding Procedure and Welding Repair Procedure done on one Buckle ArrestorAssembly with 66 mm wall thickness

The beginning and end of the weld overlay layer shall be ground with a taper in order to have a smoothtransition between the UNS N06625 layer and the C-steel pup-piece as per figure 10.

Internal coating layer have been applied also as an extra protection of one coat of a two component glassflake vinyl ester acrylic co-polymer coating all over the BA until carbon steel pup piece reported in figure 11.

A lot of precautions have been taken to avoid any delay for Buckle Arrestor delivery to installationvessel. Buckle Arrestors have been dispatched Airfreight instead of maritime transports for weld overlayand delivered to installation contractor vessels using speed boats. This decision allowed to reduce the totallead time by approcimately 11 weeks, contributing to the successful execution of the laying campaign.

All the above actions were timley implemented and resulted in a deleviry of BAAs in line with the needsof the installation campaign. This allowed to complete the first 30inch pipeline and to start the relevantoperation, reaching production level of 2,700 MMSCFD.

The paper reviews the interpretation to identify crack measurement and differentiation between cracksand pits. As per SSC testing results, it is our intention to illustrate the consequences and the solution providedusing weld overlay of Alloy N06625 and internal coating.

Conclusion

All the samples machined from the BA forging were affected

by elephant skin corrosion. In some cases, atthe bottom of the pits, associated to the elephant skin, cracks were present;

- The maximum crack depth (83,17 μm) was found on ID-BA6 at $\frac{1}{4}$ width;
- Few cracks starting from the surface were detected. The maximum depth (69,69 μm) was found onID-BA6 at $\frac{1}{4}$ width
- There is no formal guidance in standards for the differentiation between sharp pits and cracks. Thisis the subject of ongoing debate in the national and international Oil & Gas Community.
- Weld overlay using Inconel material Alloy N06625 with thickness of 3mm cover the full length ofthe central section plus the circumferential welds (that are ground flush) and extending 100 mm oneach side of the girth welds into the pup pieces.
- Internal coating applied all over the buckle arrestor up to 1000 mm from pup piece.
- Choosing of weldoverlay was the best solution to avoid any delay for installation campaign. It waschallenging to achieve this target passing through all qualifications and fabrication methods.
- Analyze most of alternative solutions and taking this decision was benefcial in terms of cost andinstallation time.

Abbreviations

BA	Buckle Arrestor
CRA	Corrosion Resistant Alloy
DJ	Double Joint
FPB	Four-Point Bend
ID	Inner Diameter
LSAW	Longitudinally Submerged Arc Welded
MW	Mid wall
OD	Outer Diameter
WM	Weld Metal
MPQT	Manufacturing Procedure Qualification Test
MMSCFD	Million Standard Cubic Feet Per Day
NDT	Non-Destructive Testing
OM	Optical Microscope
SM	Stereo- Microscope inspection
SSC	Sulfide Stress Cracking
TJ	Triple Joint
WPS	Welding Procedure Specification

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Figure 1—CastorOne Vessel

Specimens were free from defects, as shown by magnetic particles inspections, performed before exposing the specimens in the environment.

The load to be applied was 90% Rp was evaluated by means of tensile tests on BA forging.



Figure 3—ID-BA5; ID-BA6; ID-BA7



Figure 4—Instrumented Sample.

The displacement was applied to the three specimens to be tested, mounted in the Jig with the inner surface stressed in tension, without any strain gauge instrumentation



Figure 5—Samples loaded in the Jig

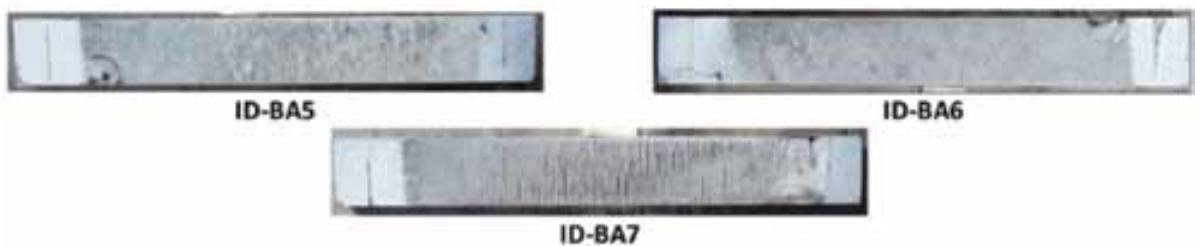


Figure 6—Post-test NTD Inspection.

The summary of test results is reported in Table 2 and examples of significant micrographs are reported in Figure 7.

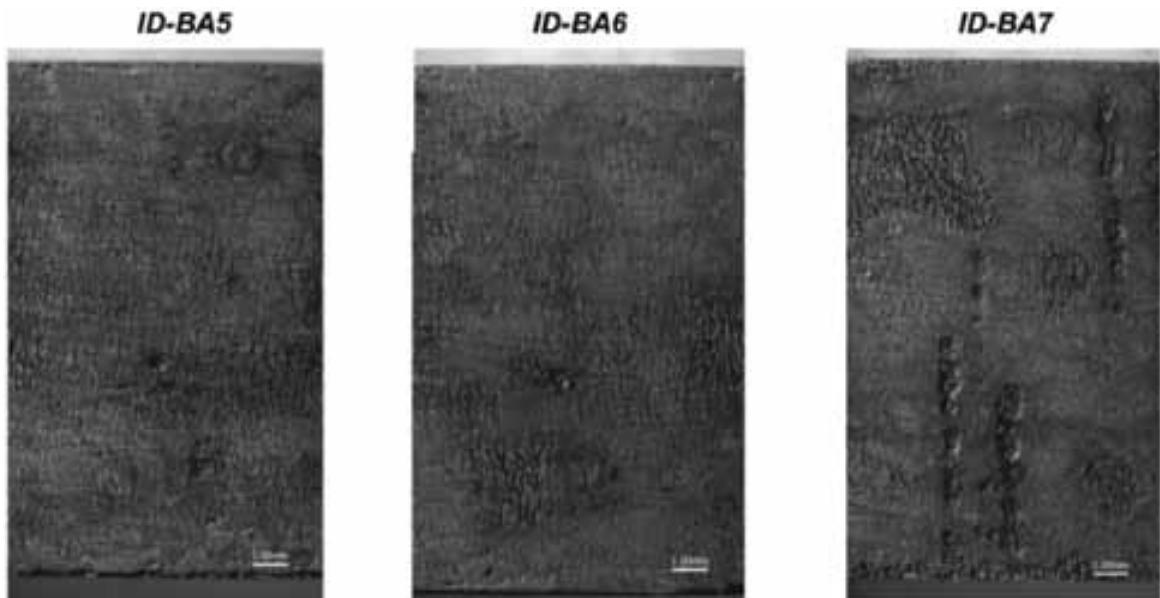


Figure 7—Post-test Analysis: stereo-microscope inspection (10X)

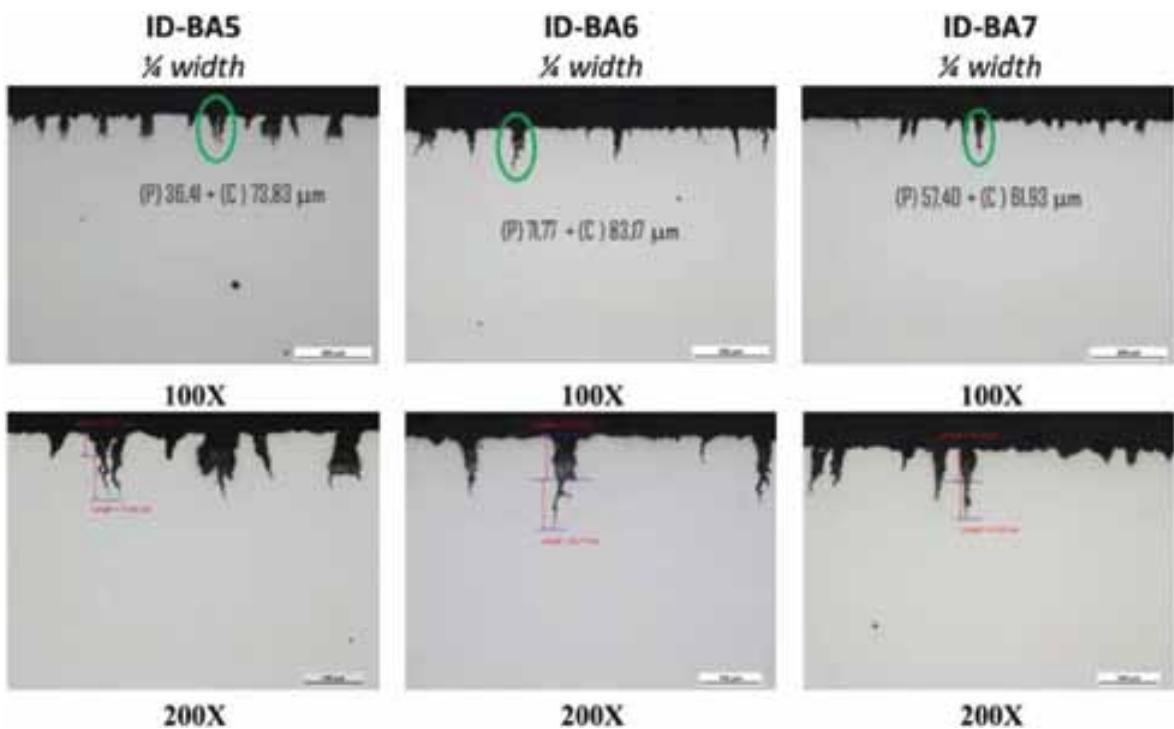


Figure 8—Post-test Analysis cross-section investigations by OM, examples of significant micrographs (100X): ID-BA5; ID-BA6; ID-BA7.

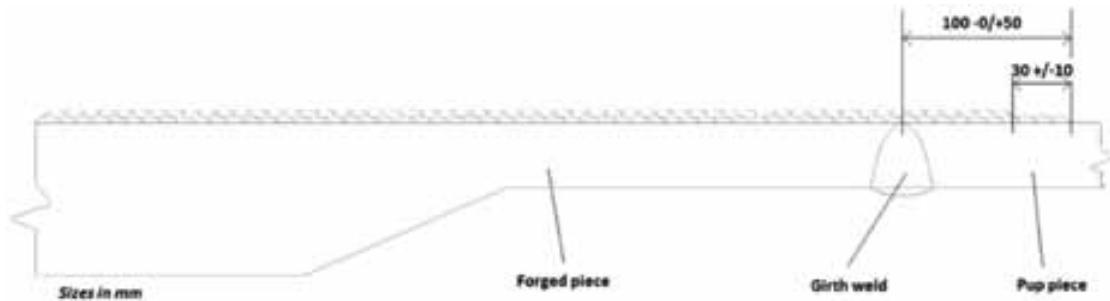


Figure.9—weld overlay covering BA, girth weld and pup piece.

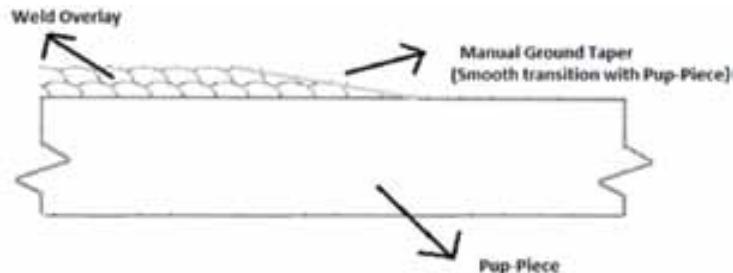
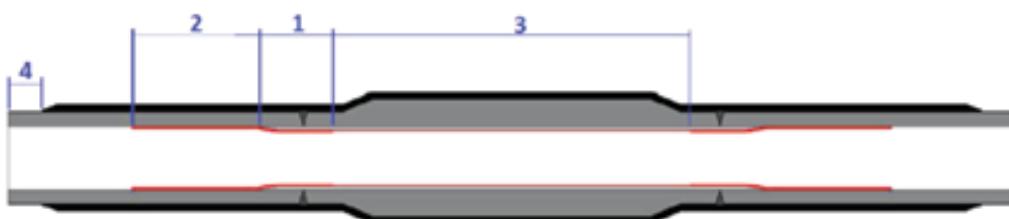


Figure.10—weld overlay machining ground taper



- (1) Internal coating CRA overlap (1000 µm)
- (2) Internal coating carbon steel overlap (1000 µm)
- (3) Internal coating CRA overlap (3000 µm)
- (4) FSPE cutback

Figure.11—internal coating of BA

Table 1—Roughness measurements

Samples	Roughness Single Measurements- Ra [µm]		
	Measurement 1	Measurement 2	Measurement 3
ID-BA5	0.061	0.065	0.039
ID-BA6	0.053	0.045	0.054
ID-BA7	0.075	0.042	0.051

Table 2—Summary of test results: ID-BA5; ID-BA6; ID-BA7

Sample ID	Position in width	Surface Features	Pit Depth (µm)	Crack depth (µm)	Total depth (µm)
ID-BA5	1/4	elephant skin + crack	36,41	73,83	110,24
ID-BA6	1/4	elephant skin + crack	71,77	83,17	154,94
ID-BA6	1/4	crack	-	69,69	69,69
ID-BA7	1/4	elephant skin + crack	57,40	61,93	119,33
ID-BA5	1/2	elephant skin + crack	69,77	30,36	100,13
ID-BA5	1/2	elephant skin + crack	87,28	59,79	147,07
ID-BA6	1/2	elephant skin + crack	112,25	36,43	148,68
ID-BA6	1/2	elephant skin + crack	109,31	44,20	153,51
ID-BA7	1/2	elephant skin + crack	74,80	54,40	129,20

ABOUT GOLDENSEA

Goldensea Maritime Group established in 2010 in Egypt has since moved on greatly from the days of the old-fashioned 'traditional' type chandlery.

With an emphasis on providing the cost structures that modern ship owner/operators require through the implementation of an aggressive import strategy, and aligning this with our customer focused service ethic, Goldensea are helping in shaping the future of the ship-supply industry in the Middle East region.

Utilizing our extensive inventory in excess of 45,000 marine store items, and combining this with our hugely experienced staff and the latest technology, Goldensea thus are able to offer, what we believe to be market-leading performance service to our customers.

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Monitoring & Surveillance Improve ESP Operation and Reduce Workover Frequency

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A bstract

The Western Desert in Egypt has multiple fields in which most wells are artificially lifted. Wells with ESPs represent the major percentage of oil production by volume in that area. ESP run life is a principal criteria that is typically evaluated before the initial design and throughout the well's life time. Most wells are remotely positioned from one another and from the main gathering stations (2 to 8 Km. approximately).

This is one of the major challenges when trying to maximize uptime and reduce the production deferment.

Operational issues including power supply and capacity limitations as well as changing inflow conditions can have negative impact on the ESP run-life, predominantly caused by excessive trips and shutdowns. Also such trips will result in lengthy downtimes due to the remoteness of the wells. On the production side, these trips will ultimately have a major effect on production targets due to intermittent deferment.

ESP wells connected to real-time monitoring and surveillance systems incur less lifting costs because of proactive responses and early detection of incidents. Systematic alarms along with pro-active remedial actions can minimize such preventable trips while maintaining the integrity of the ESP, eventually extending its run life.

This paper discusses a number of case studies showing how the implementation of such system prevented trips in some situations and allowed making key decisions and recommending remedial actions to optimize the ESP operation.

Introduction

Khalda Petroleum Company is one of the major operators in the Egyptian Western Desert, having a high number of wells (~700 wells) operating within eight different blocks in the area. Nearly half of the total production of the company is from electric submersible pump (ESP) wells. With an

objective to continuously increase the production, ESP optimization plays a major role in Khalda's plans. To aid in the optimization process, a monitoring and surveillance system was implemented on a number of key and high profile wells which were classified according to production rates, water cut and expected recovery.

Conventional ESP gauge readings include, intake temperature, motor temperature, intake pressure, discharge pressure and vibration. Essential electrical readings are obtained from the surface equipment, such as motor amps and input voltage. All of these readings are transmitted and displayed at the surface controller as shown in Fig. 1.

The monitoring system in place can be connected to several wells, over several fields. In terms of hardware, a site communication box is connected to the surface controllers of each well (Fig. 1). This unit can practically be connected to up to eight wells at the same time without compromising the data quality.

The data is then transmitted and stored on a server allowing users to view the data remotely via a web based interface. This enables proactive intervention and remedial actions for different scenarios as later discussed in the examples throughout this paper.

Trips versus Alarms

ESP controllers are utilised to set trip points to protect the ESP from undesirable events such as high motor temperature, excessive motor loading or low intake pressure. The ESP stops automatically whenever a single trip point is exceeded.

The monitoring system introduces another level of protection by setting tight thresholds for each parameter and an alarm is sent once the threshold is exceeded. The thresholds are set as close as possible to the average operating value to ensure the slightest deviation is detected. These alarm thresholds act as an additional line of defence to give the operator an additional window to deal with undesired events before approaching the trip point, thus preventing a shutdown.

On the web-based interface, downhole and surface readings can be viewed in real-time. The readings can be updated at regular intervals with a maximum frequency of 1/min. Once an alarm threshold has been exceeded, the system pushes the data to the server and automatically sends alarms to a preset distribution list. The data transmission rate between the well and the site communication box is much higher than that between the box and the server, to ensure such events are captured immediately.

In addition to the system induced alarms, dedicated surveillance engineers in an artificial lift surveillance Center (ALSC) analyze the alarms by reviewing the well's current performance. Based on this analysis more detailed alerts are communicated to the operator indicating the possible root causes leading to the recent events along with the remedial actions and recommendations.

The system also provides certain users the ability to intervene remotely by granting capabilities such as controlling the ESP speed and modifying the trip points, acting as a two way system. This feature proved to be very powerful when dealing with remote locations. Without the remote intervention capabilities, if the ESP is facing a critical event requiring an immediate action, it could take hours in some situations for a field operator to reach the well-site and execute the necessary actions.

The alarms sent by the surveillance engineers are normally classified into three main levels as explained by Camilleri and Macdonald (2010) and highlighted again by Abdel-Basset (2012):

- **Concern:** level events normally do not pose a direct threat to the ESP, but resolving them will improve the alarming and monitoring
- **Urgent:** events pose no immediate threat but an action is required to stabilize the well or improve the performance
- **Critical:** events require immediate action

The focus of this study is on what we classify as critical events which are those that would normally require an immediate remedial action. Such events, if not addressed; have the potential to greatly compromise the production and ESP overall run life. The following sections highlight some of these events and the means to address them and prevent their reoccurrence.

Case 1: Low Flow Conditions (AG-110 and NQR-2551 wells)

Low flow conditions have multiple negative effects on an ESP operation, particularly with regards to cooling conditions. The motor temperature is highly affected by the cooling provided by the produced fluid passing around the motor housing before entering the pump intake. Operating

at a low flowrate for a given motor/casing clearance causes less convection and accordingly a temperature rise. Low flow conditions are also known to trigger other trip points such as the underload setting due to the severe reduction in motor amps. In such situations the most direct remedial action is either increasing the ESP speed or opening up the choke allowing more flow to cool the motor. However, such action also increases the motor load and can consequently increase the temperature.

In this example (Fig. 2), the ESP operation became intermittent with frequent high temperature trips.

Upon each startup, the temperature would increase gradually with a slight decrease in motor amps. The hypothesis made was a low flowrate and accordingly low fluid velocity which impacts the motor cooling.

An initial indication of flowrate changes is the pump differential pressure; so using the real-time data, the differential pressure was calculated and plotted on the same log (Fig. 2). The pump differential pressure starts low and gradually increase until the ESP trips which indicates a gradual decrease in flowrate. This is supported by the gradual decrease in motor current. Production testing measurements of oil, water, and gas rates were obtained on a monthly basis using a test separator. A diagnostics analysis incorporated the downhole measurement along with flowrates which verified the fluid velocity is considerably low.

Frequent trips due to high temperature were not only causing undesired intermittent production from this well, but also jeopardizing any chances of achieving the desired run life. An optimisation scenario using the diagnostic analysis was to increase the drive frequency to boost the fluid speed around the motor and improve cooling. After each step, the flowrates, pump differential pressure and motor temperature were observed. The fluid speed effect on motor cooling was dominant in this case as shown in Fig. 2. The motor temperature was reduced by around 15F and the ESP operated smoothly with no more trips.

Another example is shown in Fig. 3 where the ESP tripped to due to a high motor temperature. The analysis has shown that the well was experiencing severe depletion leading to a no flow condition. The issue was temporary resolved by shutting the well for some time, in order to allow the pressure to buildup, then the well was successfully started up.

Case 2: Scale Buildup Issues (WRZK-94 well)

Scale that forms during production becomes a potential problem for pump flowing efficiency and motor integrity. Deposition inside the pump will alter the optimum flowpath and reduce the pumping efficiency, while deposition on the motor housing will form a layer reducing fluid cooling effect.

Intake plugging usually takes place gradually. Such plugging can be noticed when monitoring a number of parameters, including pump intake pressure which would normally increase. If a discharge pressure reading is available, it could specify location of plugging or scale build up, whether it is above or below the pump discharge head.

Three main factors affect the motor temperature at the same time:

- Motor temperature increases due to the reduction in cooling, as there is less flow around the motor housing.
- Motor temperature increases if scale significant scale deposition on the motor housing is present, which reduces the cooling effect created by the well fluid.
- Motor temperature decreases due to the decreased motor loading, as less flow is being pumped by the ESP.

Performing an ESP diagnostic aids in identifying which of the above factors is the dominant case. This diagnostic has to account for the PVT as well as other parameters, in order to accurately simulate the possible optimization scenarios.

In the case shown in Fig. 4, it is evident that the intake pressure started to increase along with the motor temperature and at the same time, the average amps started to decrease. The issue was identified, as partial intake plugging and an acid backwash job was performed accordingly. The plugging was cleared and the intake pressure dropped back as expected. However the motor temperature started to increase again as observed in Fig. 4 which is most probably due to scale deposition on the motor housing itself, subjecting it to poor cooling conditions.

This issue was temporarily resolved by reducing the motor speed, effectively reducing the load and the motor temperature as modelled in the diagnostic analysis. However the temperature continued to increase overtime and a more permanent solution was required. The issue was then resolved by performing another acid back wash job, while subjecting the ESP to a longer soak time.

The success of the second acid back wash attempt is demonstrated in Fig. 5. The motor temperature decreased by 50 degrees F (From F 285 to 235 F), as the longer soak time dissolved the scale on the motor housing, leading to improved cooling conditions.

Case 3: Dead Head (MRZK-78 well)

A Dead Head condition occurs when there is an obstruction above the ESP, restricting the fluid path to the production facilities. Having a dead head can be one of the most critical situations facing an ESP. This dead head will normally cause the ESP to rapidly heat up in a short period of time until it eventually reaches its trip point.

Having excessive events like this, will subject the motor to cyclic drops and rises in the motor temperature. This behavior can greatly reduce the ESP's run life and lead to a pre-mature failure. Fig. 6 shows an example of an ESP facing a Dead Head event. This is clear in the sudden rise of the motor temperature and the drop in motor amps, since no more fluid is being produced to the surface. A trip was prevented by the surveillance engineer and the field personnel were notified accordingly. The cause was identified as malfunctioning of the adjustable choke causing it to close, resulting in a complete restriction of the flow.

Case 4: Pump Off (SIWA 2-L2 well)

In a pump off case, an ESP basically ceases to pump any liquids due to the excessive drawdown created by the ESP. This normally happens when the liquid column inside the wellbore drops below the intake level. At this stage, gas may start to occupy the ESP stages and liquid no longer reaches the surface.

These events can be common when dealing with reservoir depletion or loss of pressure support, which can be quite common in mature fields. Such events can be prevented by closely monitoring the intake pressure. In the example shown in Fig. 7, it is clear that the intake pressure was showing a decreasing trend.

The surveillance engineer observed the ESP performance and accordingly notified the field personnel.

A potential trip was avoided by controlling the drawdown by reducing the ESP frequency, leading to a stable ESP operation.

Case 5: Recirculation (MRZK-52 well)

Detecting recirculation can be challenging, because of the several possibilities involved. In the example shown in Fig. 8. The ESP was installed with a reused ESP bypass system (Y-tool). By-pass systems introduce an extra level of flexibility to the completion since it enables well interventions (Wireline, coiled tubing, slick line. . .etc.), without pulling the ESP out of hole. A blanking plug is installed in the bypass section to prevent flow re-circulation during the normal operating conditions.

In this case, the surveillance engineer reported a low differential pressure after starting up the ESP, even though the well was still producing. This low differential pressure acts as one of the recirculation symptoms. This was correlated with other symptoms, including the intake temperature rise and low motor amps.

The blanking plug's integrity was doubted and all symptoms were supporting the circulation hypothesis (Fig. 9). The

plug was pulled by wireline, redressed, and then rerun. After restarting the ESP, the surveillance engineer again reported a low differential pressure. A workover rig was already at the wellsite to pull the completion out of hole but a last attempt was agreed with the ESP operating team to change the wireline plug one more time.

The final attempt was successful and the production was restored to the expected range. Trusting the monitoring and analysis saved a workover cost and pre-mature ESP failure. This ESP has been running for 5 years and still running as of September 2015.

Results

The implementation of a monitoring & surveillance system has shown a proven positive impact on ESP run life. Fig. 10 shows an increasing trend in average run life ever since real-time monitoring and surveillance have been introduced in the Khalda.

Two main performance factors can be used to evaluate the ESP run life:

- Average number of ESP failures over a given field. Fig. 11 shows the average number of failures experienced in Khalda wells. We can observe a drop in the number of failures, even though the number of ESP operated wells is on the rise.
- Average ESP Run life, which in this case it is based on the mean time between failures (MTBF) moving equation as explained by J. Hogan (2000):

$$\text{MTBF (Moving)} = \frac{\text{Total run life for the current year}}{\text{Number of failures throughout this year}}$$

For this study the MTBF calculation also assumes that all

of the running wells before the current year are considered to be starting at the beginning of the year (moving method). So if a well has been running for 8 years, it is assumed to be only running from the start of the current year.

Fig. 10 shows what appears to be an increasing trend in MTBF, since the surveillance system has been introduced, indicating the impact of the surveillance service. Having an increasing trend with such conservative calculation shows the value of real-time Surveillance and close collaboration between the surveillance engineers and the field operators.

Conclusion

1. ESP real-time surveillance is becoming more essential and is considered a necessary tool when it comes to production optimization. The availability of such technology also increases the level of collaboration among the field operators, office personnel and the service providers.
2. As with any mechanical system, excessive shut-downs and trips can greatly reduce the run-life of the ESP. Real-time surveillance can minimize such trips and eventually prolong the run-life of the entire field.
3. Having tight alarm thresholds ensure that any critical event is detected, giving the operator a head start to investigate and prevent undesirable operations.
4. Data gathering and monitoring can present a serious challenge when dealing with multiple wells scattered over several kilometers. Having a monitoring system along with dedicated surveillance engineers, gives the operator the ability to perform remedial actions in a timely manner. Such actions reduce the amount of deferred oil and can even directly save workovers, which would have not been prevented otherwise.

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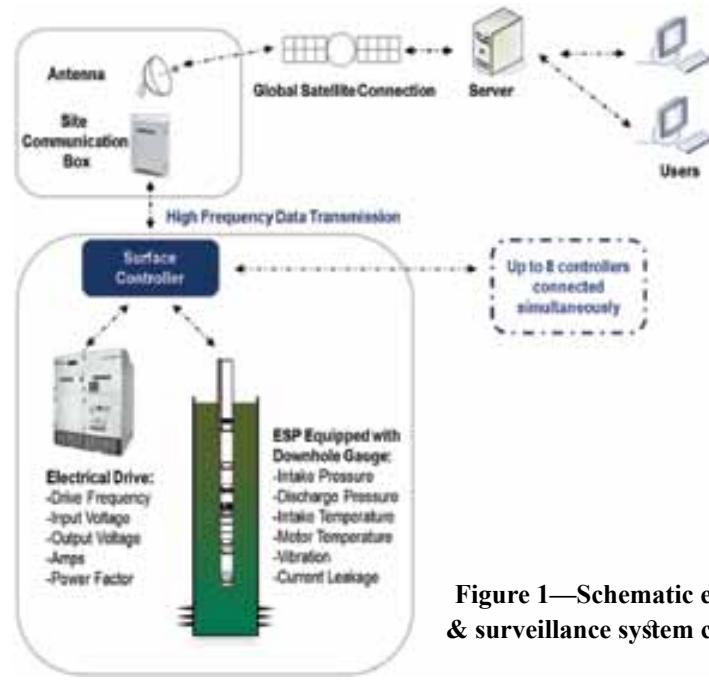


Figure 1—Schematic explaining the monitoring & surveillance system components and hardware

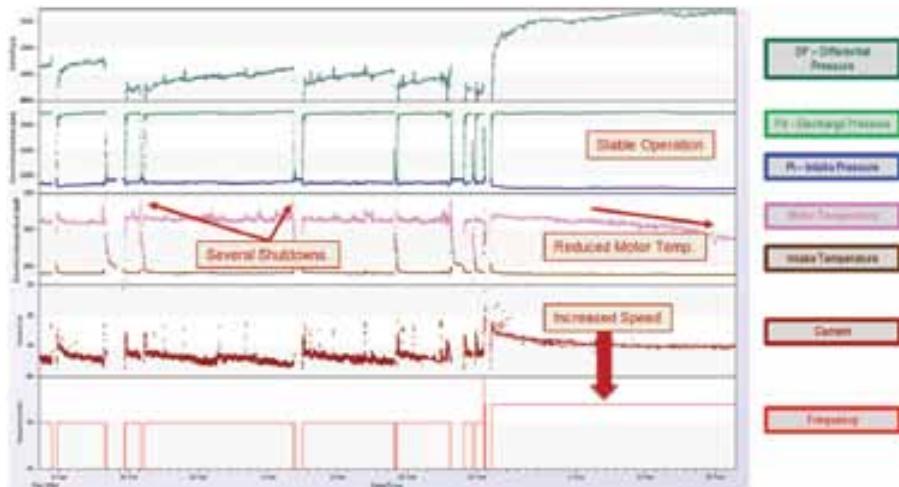


Figure 2—Low flow conditions (case 1) causing the ESP to trip several times due to the low loading. The issue was resolved by increasing the speed, hence the drawdown.

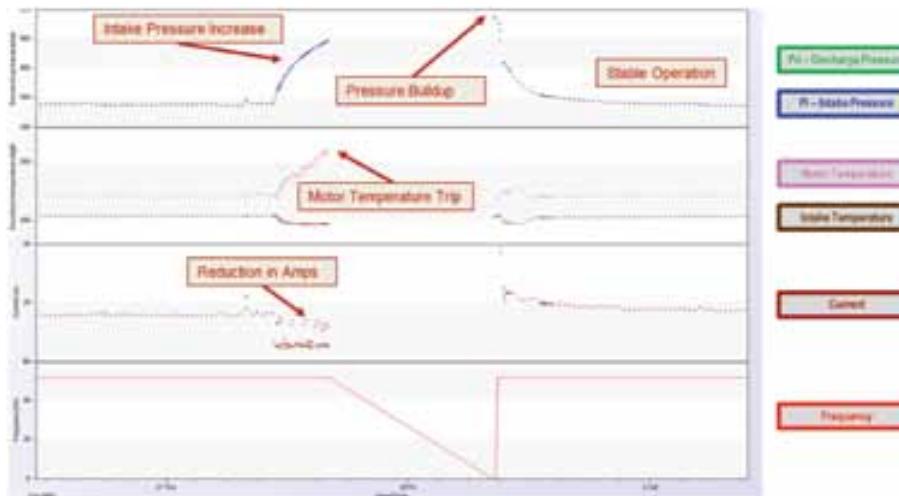


Figure 3—Low flow conditions, due to severe depletion. The well tripped and was shutdown for some time to allow the well to buildup enough pressure.

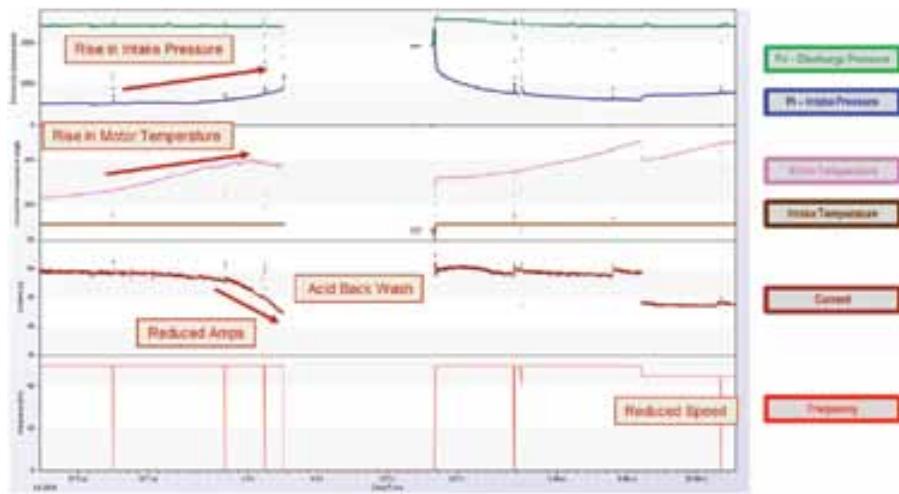


Figure 4—Partial plugging due to scale deposition (case 2). The issue was identified and the scale an acid back was job was performed.

However the motor temperature continued to rise and the ESP speed was reduced to temporary reduce the temperature.

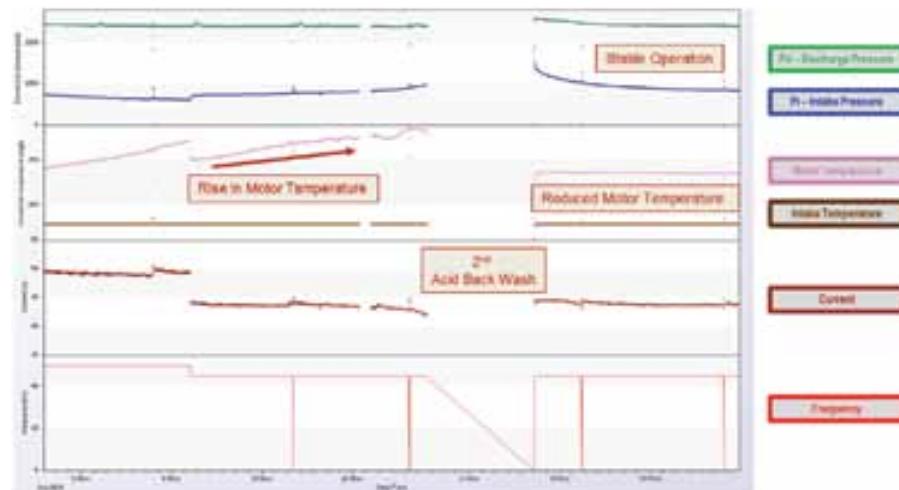


Figure 5—Same ESP as in Fig. 3. Scale was still deposited on the motor housing affecting its cooling. A second back wash job was performed was with a longer soaking time to remove any remaining scale on the motor housing. As a result the motor temperature was reduced, due to the improved cooling conditions.

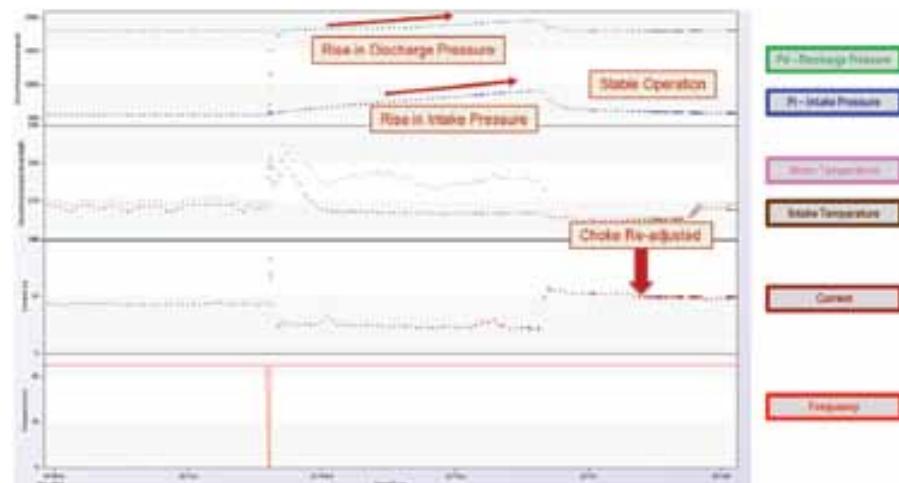


Figure 6—Dead head conditions (case 3) due to a choke malfunction

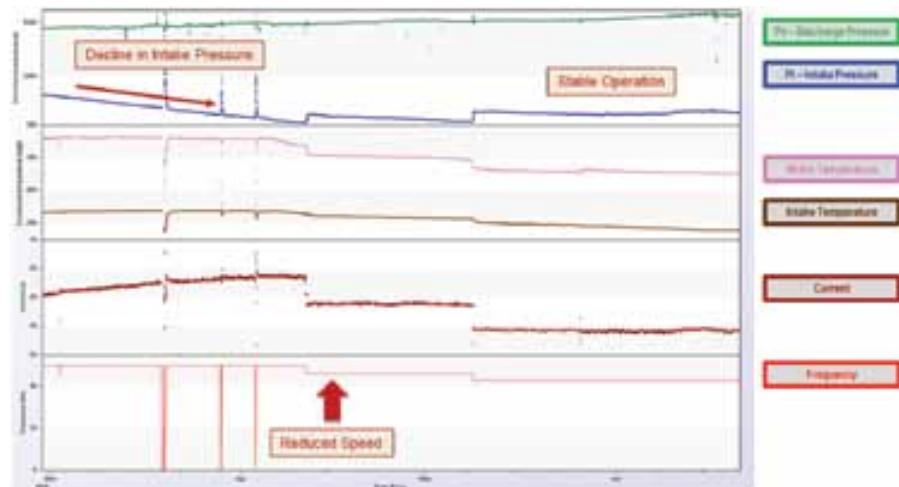


Figure 7—Pump off conditions (case 4) and the means to mitigate it. In this case once a decline in intake pressure was observed the speed was reduced accordingly.

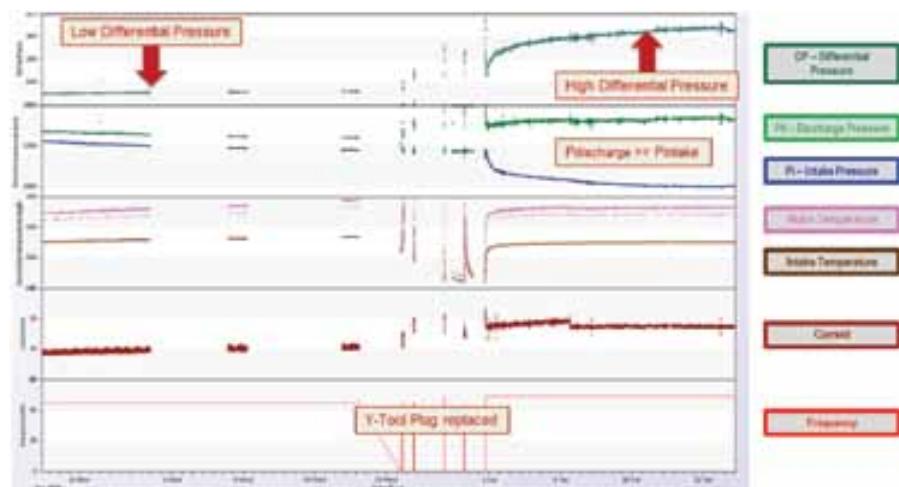


Figure 8—Recirculation (case 5) as observed by the minor differential pressure. After replacing the Y-tool plug a differential pressure was observed indicating that the ESP is producing all of the fluid to the surface.

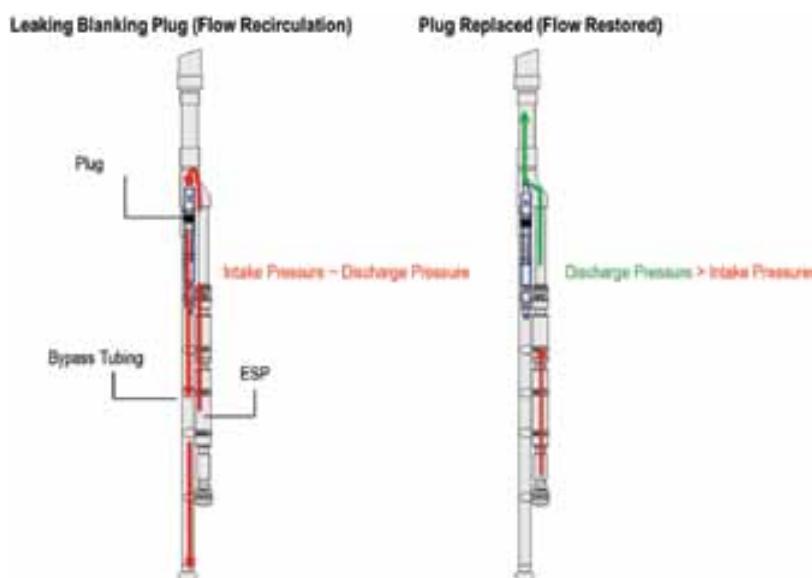


Figure 9—Schematic illustrating the recirculation phenomena when dealing with a leaking Y-tool plug.

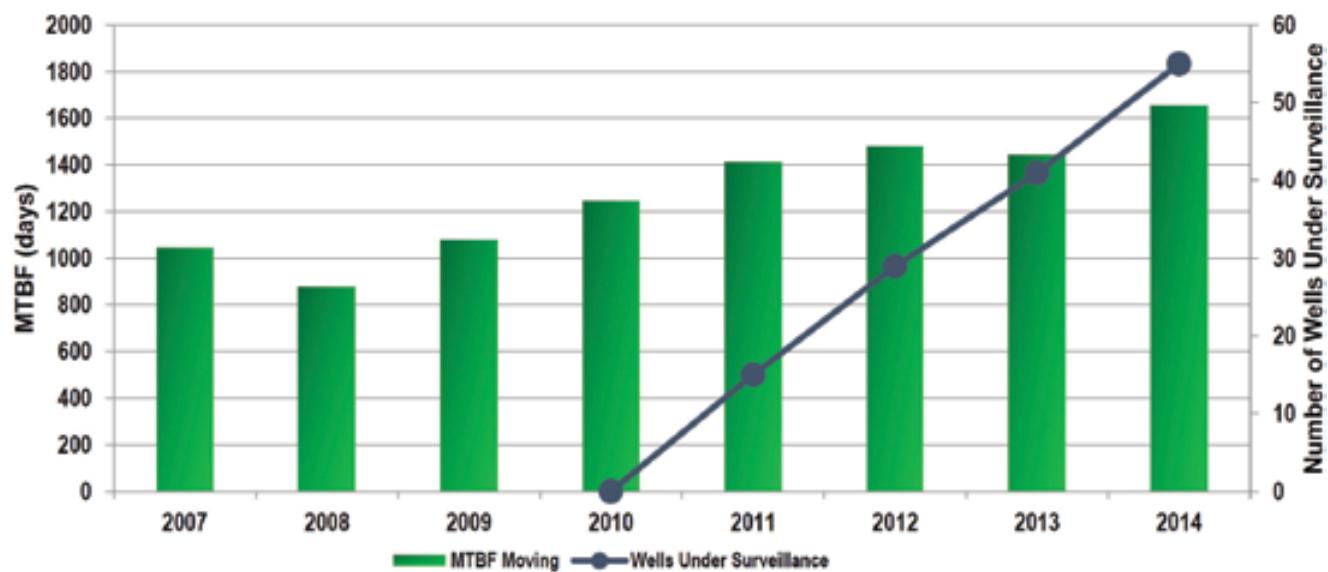


Figure 10—Rise of average ESP run-life in Khalda and the number of wells under surveillance

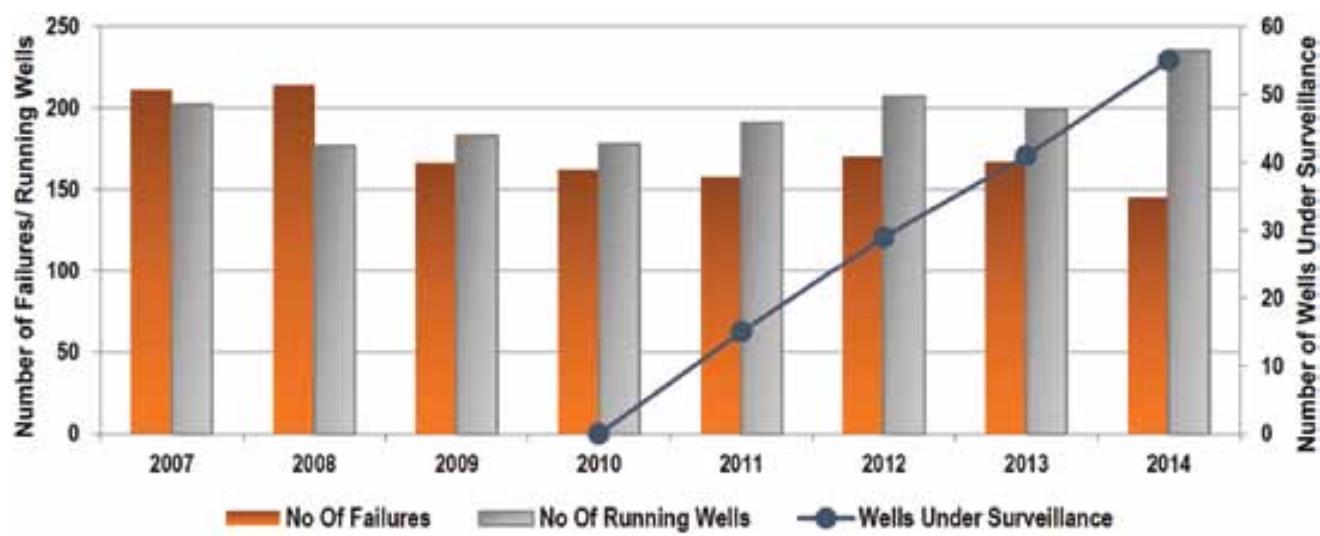
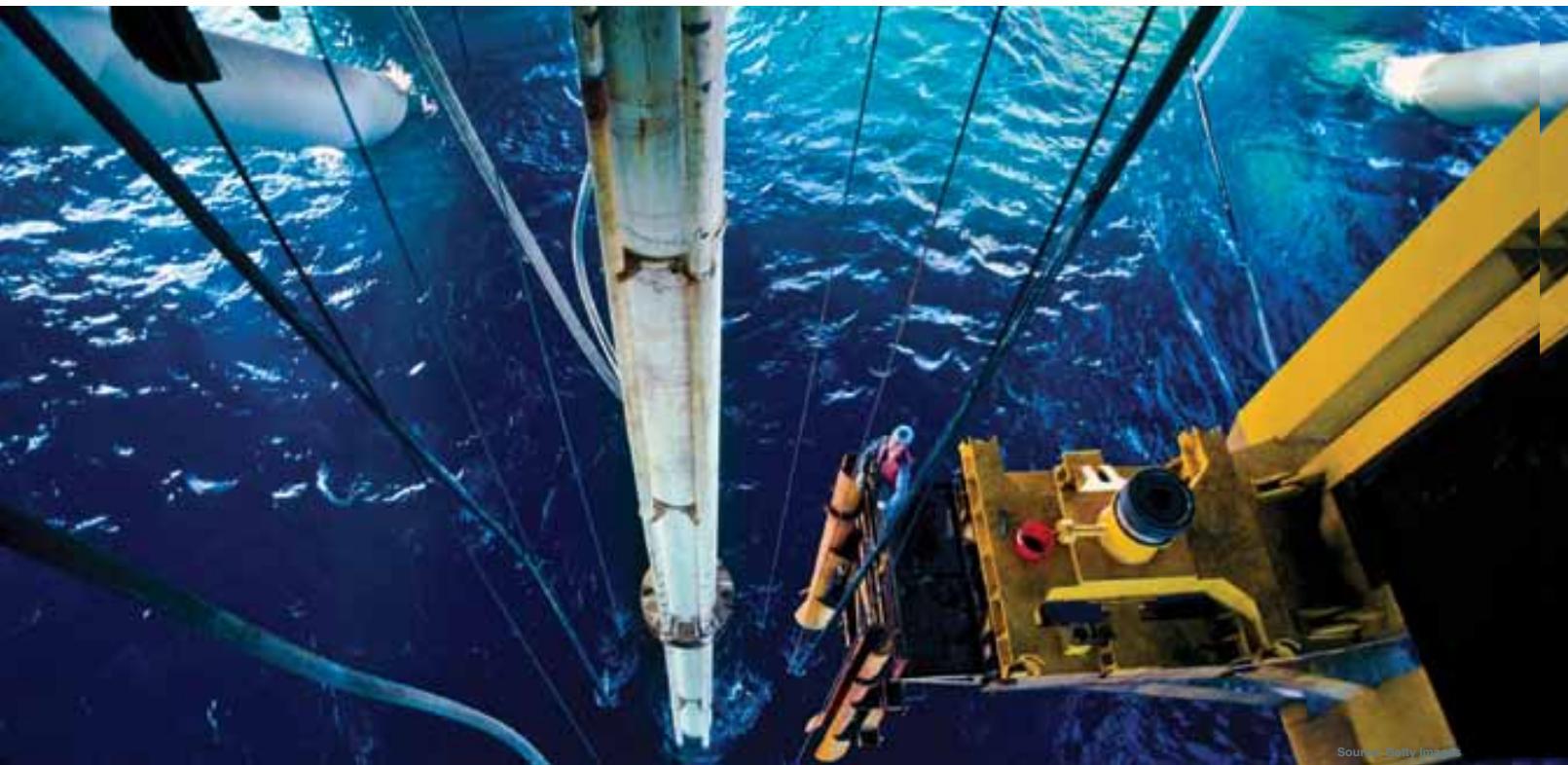


Figure 11—Number of ESP failures versus number of running wells throughout the fields operated by Khalda



Source: Getty Images

Rethinking Exploration

By: Judy Feder, Technology Editor

A **bstract**

“Down but not out” is how Westwood Global Energy Group described exploration drilling in an article based on its State of Exploration 2020 Report. The Baker Hughes rig count provides supporting details. On 12 May, the data showed 339 active rigs in the United States—the lowest level since the rig count was introduced in 1987. On 1 June, the US count plunged to 301 in its 12th week of losses. At the worst of the 2014–2016 oil bust—the previous lowest point on record—404 rigs were operating.

The worldwide rig count for May was 1,176, down 338 from the 1,514 counted in April and down 1,006 from the 2,182 counted in May 2019. And, Rystad predicted on 28 May that

more than half of the world’s planned licensing rounds for 2020 are likely to be canceled.

The consensus among industry experts is that exploration will be hit by some of the deepest cuts inflicted by the coronavirus pandemic, the biggest oil market crash in history, and the transition to a low-carbon energy future. The silver lining is that there is still a business case for exploration despite these difficult times. Julie Wilson, director of global exploration research for Wood Mackenzie, said in a recent virtual panel discussion that the role of exploration in replacing supply sources in current portfolios with “new and better” barrels of oil equivalent (BOE) will continue over the next 20 years. But for explorers to prosper, those barrels will need to be low in cost and emissions.

Rude Awakening

For the exploration sector, 2020 began with a degree of cautious optimism and increasing activity. Confidence had returned with improved performance, the highest commercial success rate (CSR) in 10 years, and the discovery in 2019 of several multi-billion-barrel plays. Explorers were keenly aware of challenges ahead, including investability, capital efficiency, the risks of exploring in deep water, and societal pressure to move toward energy transition. But, the overall outlook was for another 30 years of profitable exploration.

At the start of the year, the highimpact well count had been expected to be similar or slightly higher than the 93 wells completed in 2019. Westwood now expects around 60 to 70 high-impact exploration wells to be completed by the end of 2020, a decline of up to 35% and back to the numbers and volumes seen from 2016 to 2018 following the 2014 oil price crash. In the Gulf of Mexico (GOM), the number of executed high-impact wells has declined from 34 to 15, all in deep water. Seven of those have been spudded. For independent GOM explorers, the number of expected wells went from 13 to one, as companies decided to focus their bare-minimum budgets on near-term production.

Around 2.1 billion BOE have been discovered so far this year from the 26 highimpact wells completed, 2.5 billion BOE of risked volume is being tested by wells currently drilling, and another 4.3 billion BOE risked from the remaining “expected” wells yet to spud. Westwood now expects a total volume of approximately 6 to 9 billion BOE to be discovered in 2020, down 40% or more from 2019’s 15 billion BOE (Fig. 1).

All regions are expected to see a decline in drilling, said Westwood, with North America (including Mexico) likely to take the hardest hit, although it will still see the most wells. The eastern Mediterranean may have very few highimpact wells the rest of the year, and Sub-Saharan Africa will likely have only three to five.

“The coronavirus pandemic has done in a handful of months what even a 27-year civil war did not—brought oil drilling to a halt in Angola,” said Reuters on 26 May. Sarah McLean, senior analyst at IHS Markit, said this was the first time since the firm began keeping records in 1984 that Africa’s second largest oil producer had not had a single rig drilling.

The London-based information provider had expected at least 10 rigs to be operating there by the end of 2020, the highest number for any African nation this year.

Drilling plans in the central North Sea, Guyana, Suriname, and in the shallowwater Campeche area in Mexico are likely to be less affected, although COVID-19 may limit operations even where companies want to drill.

According to Rystad, at least nine of the world’s top planned exploration wells for 2020 are at risk of being suspended as a result of the combined effects of the COVID-19 virus and the oil price war.

These wells, located in Norway, Brazil, the Bahamas, Guyana, the US, Gambia, and Namibia, would target a combined 7 billion BOE. The wells are at risk, said Rystad, because of their lack of commercial viability under the current price levels, shutdowns that affect the supplies of equipment components, operators’ prioritization among other targets, and limitations in crew movements, among other reasons.

A Strategic Move to Stratigraphic Traps

One noteworthy trend in exploration strategy that is likely to continue is the increasing importance of stratigraphic traps. Westwood noted in its 2020 report that, during the past decade, more oil and gas were discovered in stratigraphic traps than in any other trap type (Fig. 2).

A total of 35 billion BOE has been discovered in clastic stratigraphic traps since 2008, of which 22 billion BOE (132 Tcf) were gas and 13 billion bbl were oil. The firm reports further that 75% of the oil resources and 95% of the gas were discovered in deep water.

The exploration has been concentrated geographically along the Atlantic margin, where 43% of the wells were drilled in 29 basins. The most prolific basins were Suriname-Guyana, Mauritania, Senegal, Gambia, Guinea/Bissau and Guinea/Conakry (MSGBC), Rovuma- Rufiji, and Colville, all of which yielded major new plays. Another 20% of wells have been drilled in the North Sea. Only 18 basins globally saw more than five stratigraphic traps tested.

Stratigraphic traps have shown a larger average discovery size and a lower drilling finding cost than other traps. With no structural component, these traps have often been considered higher risk than structural traps. But this is no longer the case, particularly as the industry has become better at leveraging seismic attributes and integrating with geological models in exploring for these traps. Their CSR improved from 21% between 2014 and 2016 to 50% from 2017 to 2019.

Marine turbidite sandstones in stratigraphic traps in passive margin settings delivered 90% of discovered commercial resources; finding stacked or extensive traps was key to commercial success. Large commercial deepwater standalone discoveries in clastic reservoirs are now most likely to be found in stratigraphic traps and traps with stratigraphic components. Looking beyond deepwater passive margins may deliver the next wave of traps, said Westwood.

A Changing Competitive Landscape

In addition to the increasing focus on stratigraphic traps, the competitive landscape for exploration is changing in other ways. Access to capital is increasingly difficult for companies that are not self-funding, especially smaller companies that have traditionally played the roles of pathfinder and innovator. Conversely, majors are allocating what they can of their reduced budgets to maintain high-impact exploration and its potential positive impact on future supply options. And those with the means to invest at the bottom of the cost cycle and pursue rapid development may be in a superior position to benefit from lower competition, governments desperate to sustain exploration, and recovering prices.

NOC shifts. In the short term, the recent trend toward national oil company (NOC) expansion internationally is reversing, as NOCs prioritize domestic activity. Supermajors and NOCs participated in 80% of the high-impact wells drilled in 2019. Wood Mackenzie reported in May that NOCs globally are estimated to cut exploration budgets by over a quarter on average in 2020, to about \$14 billion collectively.

“Most NOCs consistently spent between 12 and 35% of their upstream budgets on exploration, an average of about 17% over the 2015 to 2019 period. This is significantly higher than the majors’ average spend of 8% of upstream budgets on exploration,” said Wood Mackenzie Senior Analyst Huong Tra Ho. Nonetheless, he explained, strong mandates that prioritize domestic activity and contribution to government budgets will mean deeper cuts to overseas budgets.

Two factors—constrained domestic resources and financial strength—create contrasts. As organically added resources are expected to contribute between 50 and 70% of their production in the next decade, Petronas and CNOOC are striving to protect their exploration plans as much as possible. By contrast, Gazprom and Rosneft have long reserve lives and feel less pressure to rush their exploration plans. Similarly, Petronas, PTTEP, CNOOC, and others with strong balance sheets are better able to continue with most of their high-impact exploration ambitions.

“Exploration budget cuts, while necessary today, will impact companies’ future growth and sustainability. Given how important exploration is for the NOCs and their growing share of global new discoveries, these budget cuts are likely short-term measures rather than longterm,” said Ho. “We expect NOCs to revitalize their exploration programs as the sector recovers.”

Frontier dilemma. Accessing plays at the early stage of the exploration curve has never been more important, and to do so, explorers need to be in at the start. Eleven of the top 16 discoveries in 2019 were made at the emerging stage, and

90% of discovered resources in plays opened since 2010 have been captured by companies that already held acreage in the new plays as they were opened.

A fast-follower strategy generally has not worked for emerging plays. Fastfollower companies were only able to access 10% of the discovered resource in plays opened since 2010.

Yet, many companies can’t afford the challenges that face frontier explorers. For example, frontier drilling commercial success rates were only 7% in the last five years. Additionally, the need to consider full-cycle time frames and aboveground challenges is important now more than ever. Over the last decade, the median time from frontier discovery to first production has been 8.5 years.

This dilemma has forced explorers to make a decision: a.) Continue to innovate and tolerate frontier play risk (if they can afford it) to sustain the emerging play prospect inventory; or b.) abandon new frontier exploration, either temporarily or permanently. Kosmos Energy, known as a successful specialist frontier explorer, has transitioned to a full-cycle E&P company and has announced it will not be accessing any new-frontier long-cycle acreage in light of the energy transition. Woodside also announced that it will no longer invest in long-cycle exploration.

E&Ps justified US light, tight oil on the basis that it was short cycle and flexible.

The problem is that it is also expensive. Deepwater frontier oil can be low cost and shorter cycle. Jubilee and Liza were 3.5 and 4.5 years, respectively, from discovery to first oil.

Infrastructure-led, near-field offshore drilling has become an obvious choice for many, with an average cycle of 3 years from discovery to first production. There are limits to the number of drillable prospects in tieback distance, and highimpact discoveries in mature basins are rare. However, near-asset subsea tiebacks accounted for much of the 2019 growth in exploration wells. A degree of stability and certainty could provide a boost to these swing-type, high-return exploration wells and to the sustainability and competitive positions of the independents who excel at them and drove the 2019 success.

ESG impact. The environment/social/governance (ESG) investment movement and transition to low-carbon energy mean that oil is losing favor, natural gas is becoming more popular, and discoveries with low breakeven costs and low emissions will have premium value in the future. Companies will assess emissions before investing.

What's Next?

Without question, this is a difficult time for exploration,

but there is still a business case for it, say the experts. The discovered-resource opportunity for oil and gas grows. An estimated 51% of the high-impact resources discovered since 2008 remain undeveloped, and 34 billion BOE of potentially commercial resources discovered between 2008 and 2016 have shown no sign of progression since 2016. This offers significant opportunity and competition for exploration if

the barriers to commercialization can be removed.

Explorers have raised their game and need to continue to do so, with a focus on finding low-cost, low-emissions reserves. Those who do can continue to prosper in the transition to come. In the immediate term, however, the industry may have to do something totally counterintuitive: Let exploration take a back seat. JPT

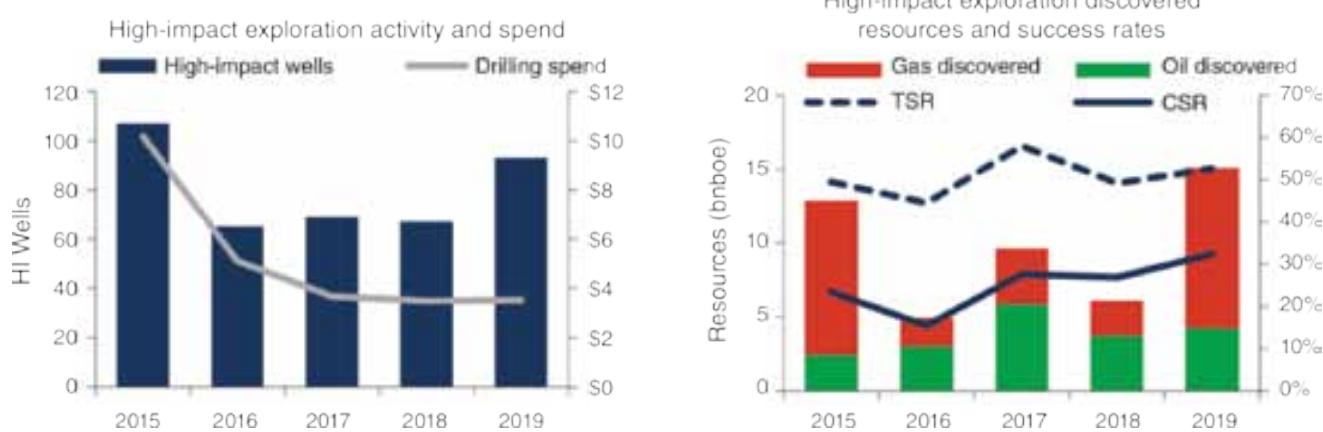


Fig. 1—High-impact exploration activity and discovered volumes 2015 to 2019, with the projection for 2020. Westwood has classified the wells as either drilled, drilling, or expected. Source: Wildcat, Westwood Analysis

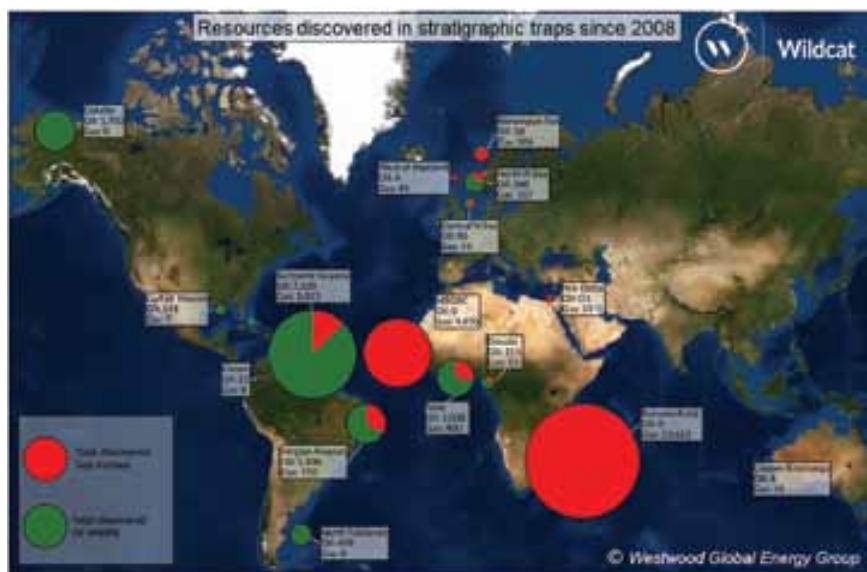
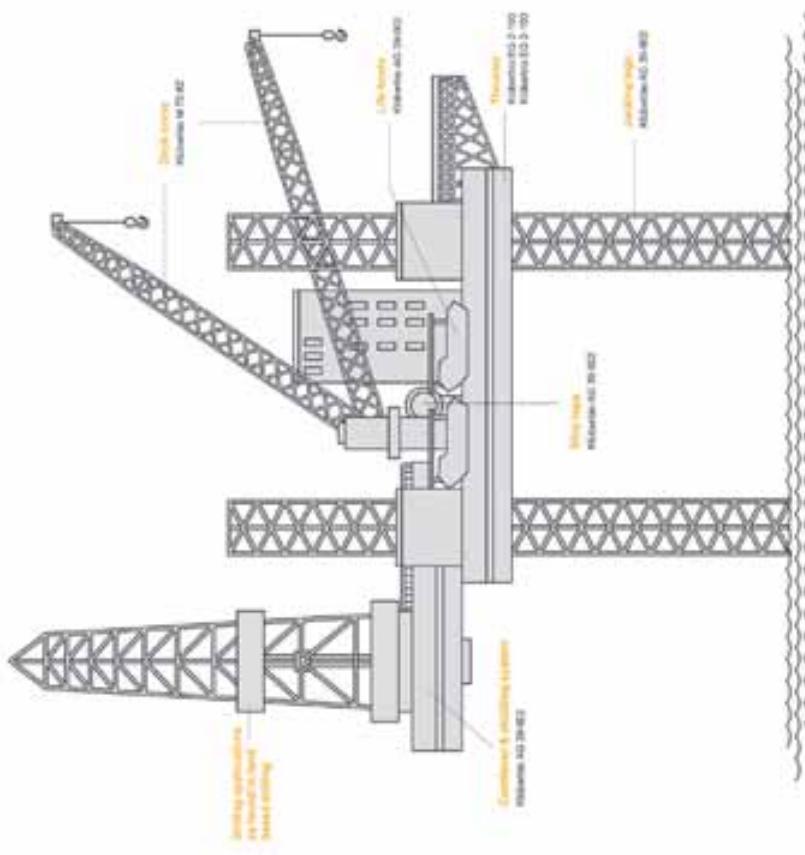


Fig. 2—Oil and gas commercial resources discovered in stratigraphic traps since 2008 in basins with more than five stratigraphic trap tests. Source: Westwood Wildcat and Google Maps.



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The diagram illustrates the experimental setup for the NA62 experiment at CERN. It shows a particle beam source at the top left, which emits particles towards a target area. The beam passes through several magnetic dipole magnets represented by grey rectangles. A central vertical structure, labeled 'Target' and 'Thermal veto detector', is positioned above the target area. To the right of the target, there is a large rectangular detector labeled 'Cerenkov & Cherenkov detector'. The entire setup is situated within a building, with a 'CERN Building' label pointing to the structure. A legend on the right side provides definitions for the labels: 'CERN Building' (building), 'Target' (target), 'Thermal veto detector' (detector), and 'Cerenkov & Cherenkov detector' (detector).

A tall lattice tower with a crossarm at the top, labeled "Kolomna".

The diagram illustrates the KOMATSU 600-3E wheel loader with various components labeled:

- Operating Systems:**
 - KOMATSU UIMA 1 IN Series
 - KOMATSU UIMA 1 H Series
 - KOMATSU UIMA 4H Series
 - PETAMO GYR 123 H
 - SURCHI DOPHAL VA 10
- Structures:**
 - KOMATSU UIMA 1 IN Series
 - KOMATSU UIMA 1 H Series
 - KOMATSU UIMA 4H Series
 - PETAMO GYR 123 H
 - SURCHI DOPHAL VA 10
- Other:**
 - KOMATSU UIMA 1 IN Series
 - KOMATSU UIMA 1 H Series
 - KOMATSU UIMA 4H Series
 - PETAMO GYR 123 H
 - SURCHI DOPHAL VA 10

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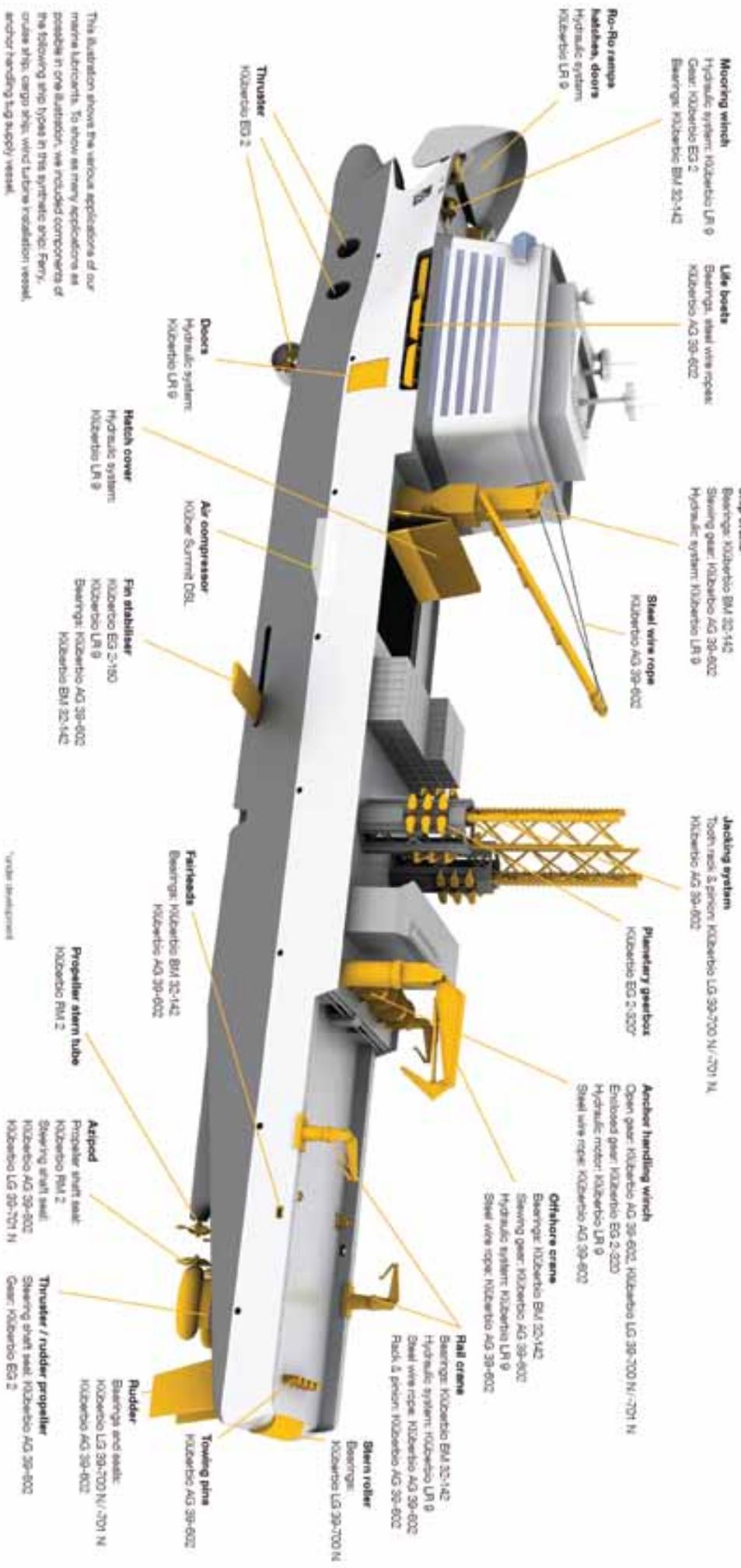
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Developing an Offshore Greenfield by Exploration and Development Integration-A Case Study of LD Oilfield

By: Mohammed Almiyad and Anas Alhasan, Saudi Aramco

A bstract

Many onshore oilfield development practices have proved that the integration of exploration and development is an effective way to avoid risks and improve benefits which is marked by phased development. However, the development of offshore oil and gas fields must rely on offshore production facilities such as floating production storage offloading (FPSO) units as well as production platforms. Once the offshore oil production platform is in place, future exploration, development and production operations must be carried out within a certain range of platform. The biggest challenge for offshore oilfield phased exploration and development is that the platform is far from potential oil and gas resources. Any drilling, evaluation, and development activities within the coverage of the platform are subject to the platform's design throughput, external transport capacity, number of well slots, etc.

Key Words: integration, offshore oil fields, exploration and development, engineering facilities, reservoir resources, economic benefits

Introduction

As mentioned above, on the one hand, the exploration and development activities of offshore oil and gas fields must rely on certain engineering facilities. On the other hand, the construction scale of the engineering facilities must be predicted and matched with the exploration prospects of the area, that is, the resource potential (Shigapova, D., 2015, Uniyal, P. 2015). We are in such a contradiction should we go to the engineering facilities to prove the oil and gas resources first, or do we first drill the wells to find out the oil and gas reserves and then start construction? From an economic perspective, the answers to both questions are negative. So, how can we realize the integration of exploration and development of offshore oil and gas fields?

The most reasonable «integrated» plan should be the integration of exploration, development, drilling, production, ocean engineering and environmental protection. Firstly, we start with exploration and fully forecast and estimate the various types of oil and gas resources (proven, control, forecast, and prospect) available in the area. Then, based on the oil and gas resource enrichment zone, the engineering design plan is planned, and the overall requirements for oil, gas, water treatment, pipeline transportation, electricity and well slots, as well as future adjustments and measures to improve recovery are designed. Finally, according to the distribution of reserves, reserves levels and the engineering design progress segment implementation is adopted. This will not only expand the scale of oil and gas production, but also reduce the amount of repeated construction projects, and maximize the «economic benefits as the center» concept(Shook, G. M., 2014., Feineman, D., 2009, Kharghoria, A., Gonzalez, S., 2019). This article mainly expounds the integration concepts, basic ideas and countermeasures of offshore oil and gas field exploration and development and takes LD oilfield as example.

LD Oilfield Description

Greenfield Introduction

LD-2 oil field is located in the Liaodong area of the Bohai Bay. LD-3 is a green zone which is a satellite oilfield of LD-2, located at the northeast of the LD-2 oilfield, about 1.2km north of LD-2-A platform. It is proved by rolling development and edge expansion of LD-2. The average water depth is 32.5m, and in the East Asian continental monsoon climate zone, the average tidal range is 2m ~ 3m, the high tide range is about 4m, and the highest water temperature is 24.6 °C. By the end of 2019, there were a total of 20 development wells in the main area, including 14 oil wells, 6 injection wells, and daily oil production of 417 m³ (about 2627 barrels). The main area has a high water cut, large production declines, complex remaining

oil, making it difficult to infill wells, and stabilizes production. It is urgently needed to develop new reserves to achieve production replacement. The main features of this new zone are high-porosity (26.7 ~ 31.7%) and medium and high-permeability (95mD ~ 542mD), light oil (surface crude oil density: 0.895t / m³, formation crude oil viscosity: 2.34mPa.s.), high productivity (the maximum daily output of a single well exceeds 250 m³ about 1,575 barrels).

Exploration History

The first stage of exploration: Since the main oil-bearing formation of the surrounding large oil fields is the Dongying Formation, we focus on the Dongying Formation for exploration in the first stage of exploration.

From August-1987 to December-2008, five exploration wells, SZ-3, SZ-4, SZ-6, SZ-10, and SZ-1S, were drilled successively in the eastern rising plate of the No. 1 fault in western Liaoxi. Because the sand is not developed and the fluid properties are poor, the test productivity is low. The thickness of the logging interpretation reservoir is 4.1m ~ 17.5m, and the drilling steam test (DST) daily oil production is 2.8m³ ~ 18.4m³(17.6 barrels ~ 115.2 barrels). It has no development potential and the exploration is suspended.

The second stage of exploration: through in-depth analysis of oil source, fault and reservoir matching relationship, the second stage takes Sha Formation under the Dongying Formation as the target. In August - 2018, the well LD-3-1 was drilled in the high part of the favorable fault block. The drilling depth was 1950.0m. The well encountered a 52.5m / 19 layer of the oil layer in the first section of Sha Formation. The successful drilling of Well LD-31- opened a new situation of rolling and expanding the mature oilfield, and confirmed the oil and gas properties of Sha Formation in Block 4 - 3.

Favorable reservoir analysis and evaluation strategy

Under the control of fault No. 1 in Liaoxi, the target area is a north-east trending semi-anticline structure.

Internal secondary faults develop which divide the entire structure into multiple fault blocks. Combining data from seismic facies, logging facies, and analytical tests, the Sha Formation of this oilfield is a braided river delta sediment (Fig.1).

The characteristics of each micro phase are as follows:

Underwater channels: The lithology is mainly medium and fine sandstone, and the sedimentary structure is mainly staggered bedding. The particle size probability curve is a two-stage equation, with jumping and suspended components as the main components. The shape of natural

gamma curve is box-shaped or bellshaped.

Dam: The lithology is dominated by medium and fine sandstone, and the sedimentary structure is dominated by plate-like staggered and parallel bedding. The particle size probability curve is two-stage, with jumping and suspension components as the main components. The shape of the natural gamma curve is funnel-shaped, with vertical development and coarsening inverse grain order.

The lithology is mainly composed of fine sandstone and gravelly fine sandstone. The granularity probability curve shows the overall development of jumping and suspension. The reservoir mainly develops the sedimentary micro facies of the sub-channels and estuaries in the sub facies of the leading edge. The logging curve is funnel shape, box type and compound type.

The oil source comes from the Sha Formation in the western and central Liaoxi sags; long-term active faults and unconformities provide unimpeded passage for migration. Moreover, the eastern third member is thick mudstone, providing good conditions for oil and gas preservation.

Vertically, the reservoir is mainly developed in the first and second oil formations of the Sha Formation.

The sedimentary facies is located in the main front of the braided river delta. It has the characteristics of high sandstone content and large single-layer thickness. On the plane, the sand distribution is relatively stable, and the well-to-well correlation is excellent. However, the sand range and thickness are affected by the ancient landforms and sediment source supply, local variation. In the early period, the sediment were filled and leveled, and the sand body range was limited. In the later period, as the ancient landforms slowed down, the range of sand bodies becomes larger. Under the guidance of sedimentary model and reservoir amplitude response characteristics, predominant reservoirs are predicted by the amplitude attribute. The results showed that the range of predominant reservoirs from III oil group to I oil group gradually increased (Fig.2).

Evaluation program

LD-31- was drilled in the high part of the favorable fault block. The well encountered a 52.5m / 19 layer of the oil layer in the first section of Sha Formation. The successful drilling of Well LD-31- opened a greenfield.

The well is located in the middle of the fault block. Since this area is a complex fault block reservoir, more exploration wells are needed to evaluate adjacent fault blocks, including sand thickness, sand porosity, sand permeability, oil saturation, oil-water contact(OWC) and gas-oil contact(GOC).

The principles of the evaluation well are as follows:

1. Ability to evaluate the potential of the northern block and

- the main block;
2. The well position fully considers the overall development plan(ODP) in the future;
 3. Relying on the existing platform capabilities is conducive to the implementation of drilling and completion.

In view of the fact that the area is relatively close to the production platform (less than 1.2km), it is recommended to use the remaining wells of the platform to evaluate the area-development of evaluation wells, that is, to retain production after successful evaluation. A11S1 is used to evaluate the northern block, and A7S1 is used to evaluate the reservoir and oil-water contact at the bottom of the main fault block(Fig.3).

A11S1 encountered 19.8m oil sand (three layers). A7S1 drilled the OWC, which confirmed that the sand at the bottom of the main block were not developed and did not have production conditions. A7S1 sidetracked to the high part A7D1, and the oil sand was 42.2m(Fig.4). The initial daily oil production of A11S1 was 100m³(630bbls) without water with draw down1.5MPa. The initial daily oil production of A7d1 is 259m³(1568bbls) without water, draw down 0.86MPa.

Greenfield over all development plan

1. First of all, it is necessary to clarify the principle of reserves utilization(Levanov, A. N.,2014):

1. Prioritize the use of high-quality proven geological reserves and more practical control geological reserves;
2. Edge of reservoir, low degree of overlap, and low reservoir abundance are temporarily unavailable.

Secondly, the distribution and quality of reserves are categorized and classified. The proven reserves of the field are mainly concentrated in main block, accounting for 84.2% of the total provenance. Vertically:

mainly distributed in the II and III oil groups, accounting for 81.4% of the total provenance. Some reserves have not been developed and they are mainly concentrated in the edge of oil group I(Fig.5).

1. Low reserve abundance: I oil reservoirs are thin and change rapidly, with large oil bearing areas and low reserve abundance.

2. Poor overlap: The reserves of the margins of the oil group I and the main oil groups II and III are poor overlap and cannot be taken into account.

The main development principles of the field are as follows:

Aquifer is limited, natural energy is weak, water injection is necessary, and reasonable formation pressure is maintained

(Fig.5). The oil properties are good, the oil layers are stacked vertically, and the permeability difference is small. A series of directional wells are used for development. According to the distribution characteristics of each fault block, an irregular well pattern with high oil production and low water injection is used.

The initial production an oil well depends on the permeability, oil viscosity, draw down, and sand thickness. This paper uses an analog method, which compares the specific oil recovery indices of A7d and A11S1. The results show a linear relationship between the oil index and fluidity. Therefore, it is recommended that the specific recovery index of the main well area is 6.86m³/(d·MPa·m), and the specific recovery index of the northern block is 3.40m³/(d·MPa·m)(Table.1).

Commingled production with directional wells was presented in ODP mainly due to low fluid viscosity, large sand thickness, high single well productivity, and excellent sand body stacking. In addition, the permeability difference between oil groups of I, II, III is not obvious, and the permeability difference is less than 3(Fig.6).

Recommended development plan: 15 new development wells (7 injections and 8 productions) are planned to be put into production in 2021, with a peak annual oil production of 35.02×104m³(2.2MMbbls), cumulative oil production of 260.15×104m³(16.4MMbbls), and oil recovery factor 29.7%(Fig.7).

Potential development plan: An additional well (C18H) is added located in unused reserves in the poorly overlapped area of the I oil group. The oil-water contact of the I oil group is uncertain. There may be a pushdown.

The control reserves can be upgraded to proven reserves and 2 new injection wells (C19, C20) added with two reserved well slots. After the implementation of the pilot hole in the southwest block, one well (C21) can be added and the well pattern can be optimized (C21 convert to producer). After the completion of the south bock and north block reservoirs and control reserves, 5 wells can be added (C22, C23, C13, C14, C15). The potential plan adds 24 new development wells (11 injections and 13 productions). Compared with the recommended plan, 9 wells were added. It is planned to start production in 2021, with a peak annual oil production of 46.58 cubic meters, and cumulative oil production of 3.5278 million cubic meters. The recovery rate is 30.4%(Fig.8).

Conclusions

Focus on economic benefits, scientific and reasonable development of oil and gas fields is the core idea and target of exploration and development integration. With the reduction of the green oilfields scale, the decline of oilfield quality, and the sharp increase in the development cost of greenfield, the

integration of exploration and development can accelerate the development and increase the benefit of green oilfields. This technology must adhere to the organic combination of exploration and development, surface and underground, present and future, oil fields and zones, technology and management.

Acknowledgment

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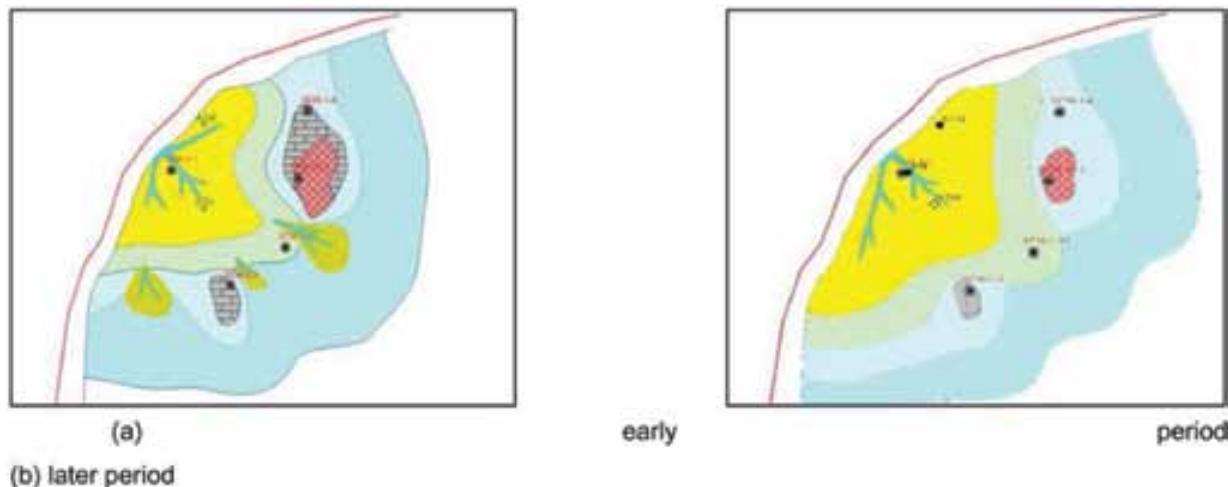


Figure 1—Sedimentary microfacies of LD-3

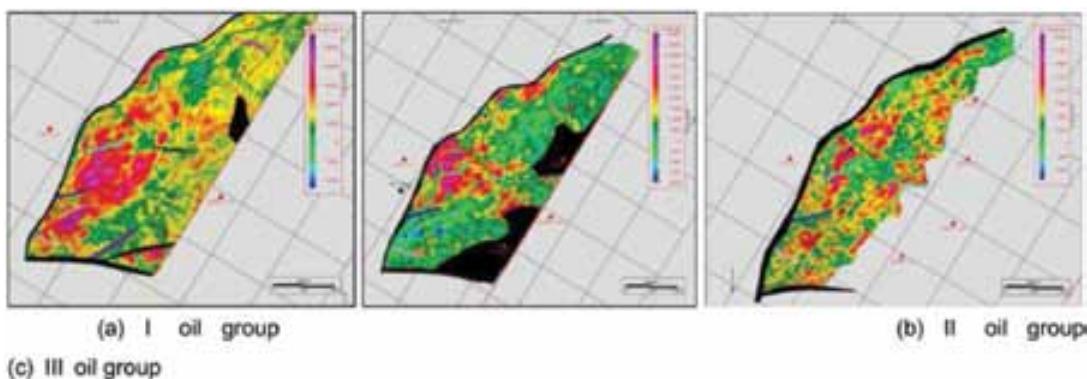


Figure 2—Seismic amplitude attribute

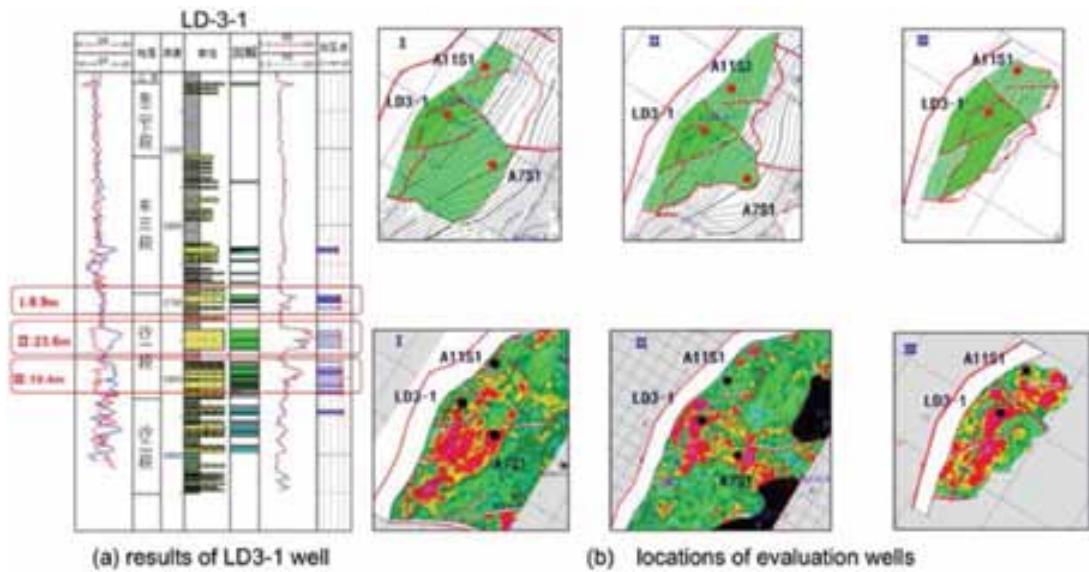


Figure 3—The results of LD3-1 well and locations of evaluation wells(A7S1&A11S1)

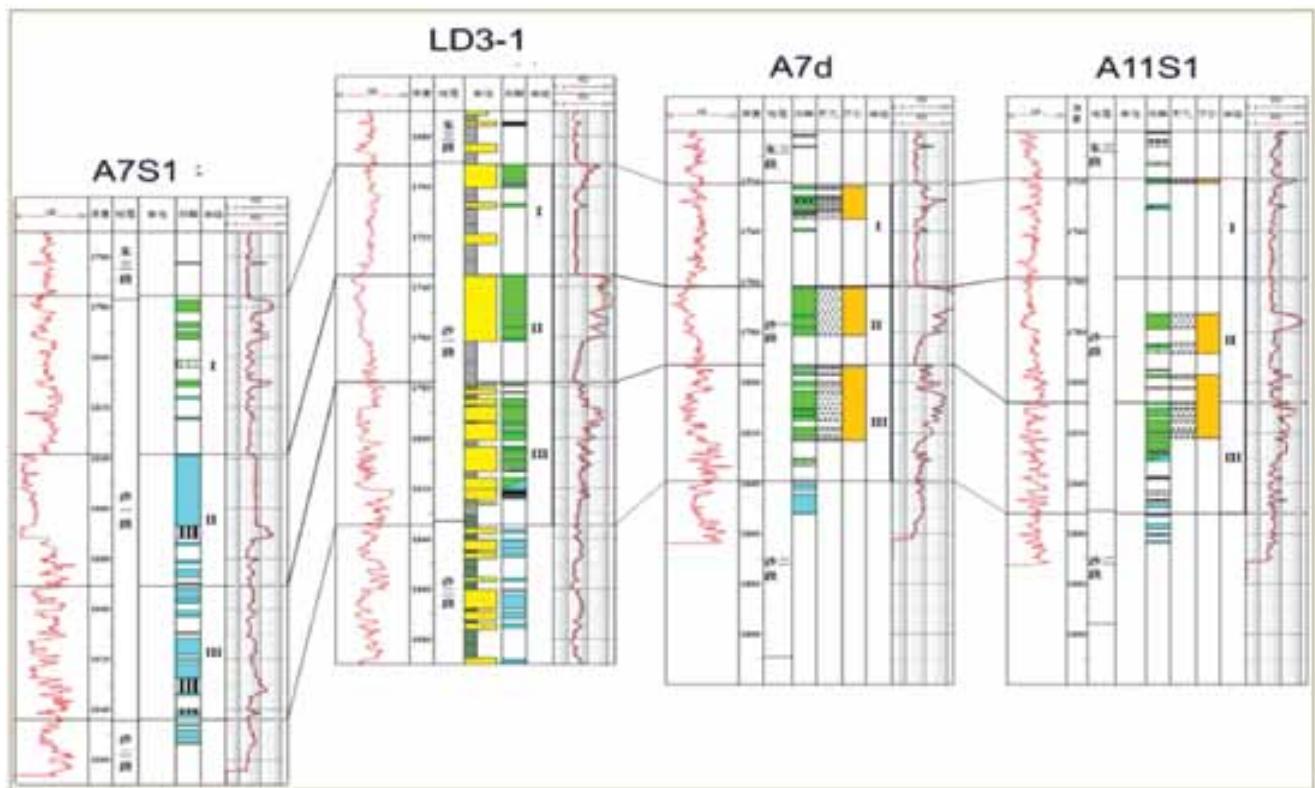
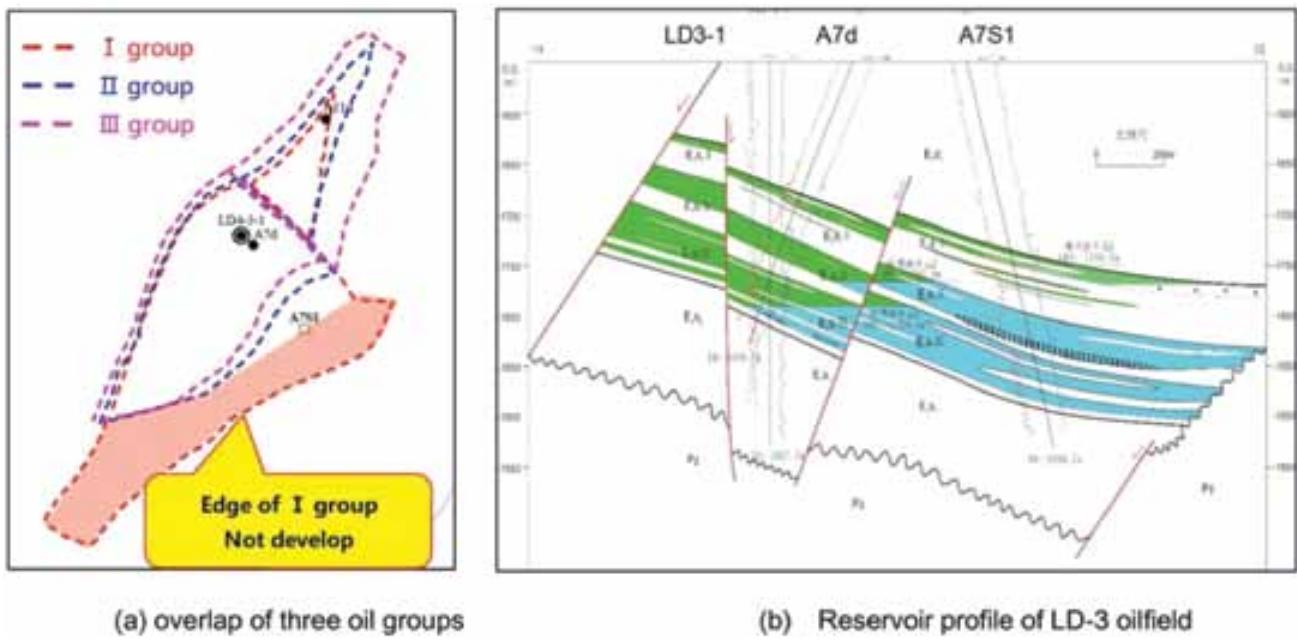


Figure 4—The results of evaluation wells (A7S1, A7d&A11S1)



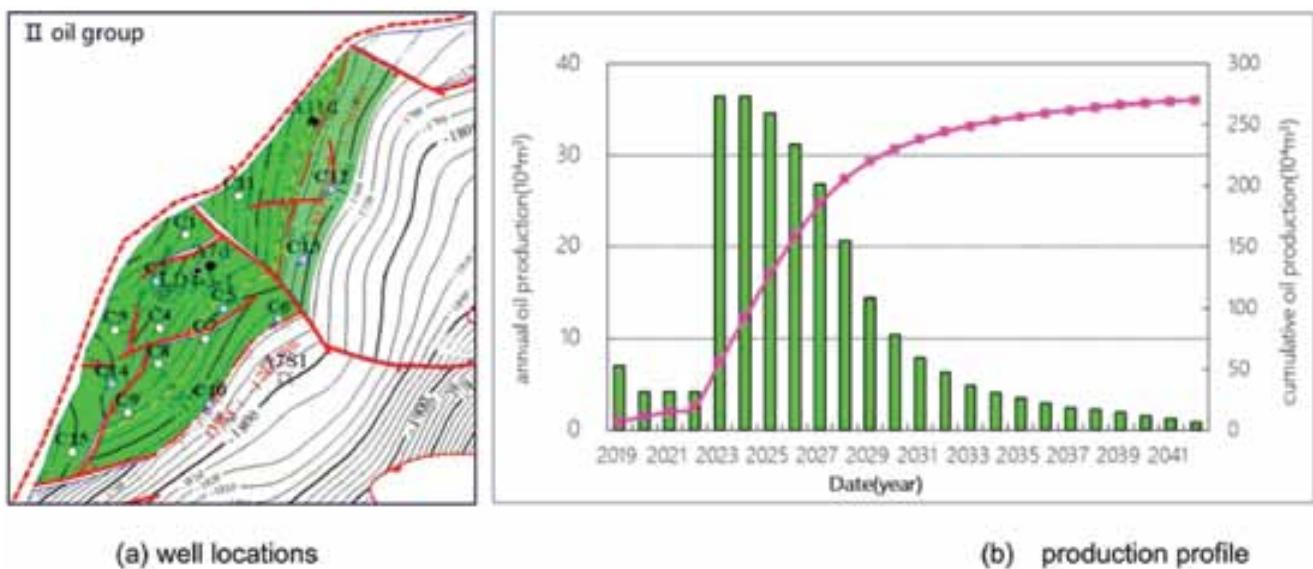


Figure 7—The well locations and production profile of recommended development plan

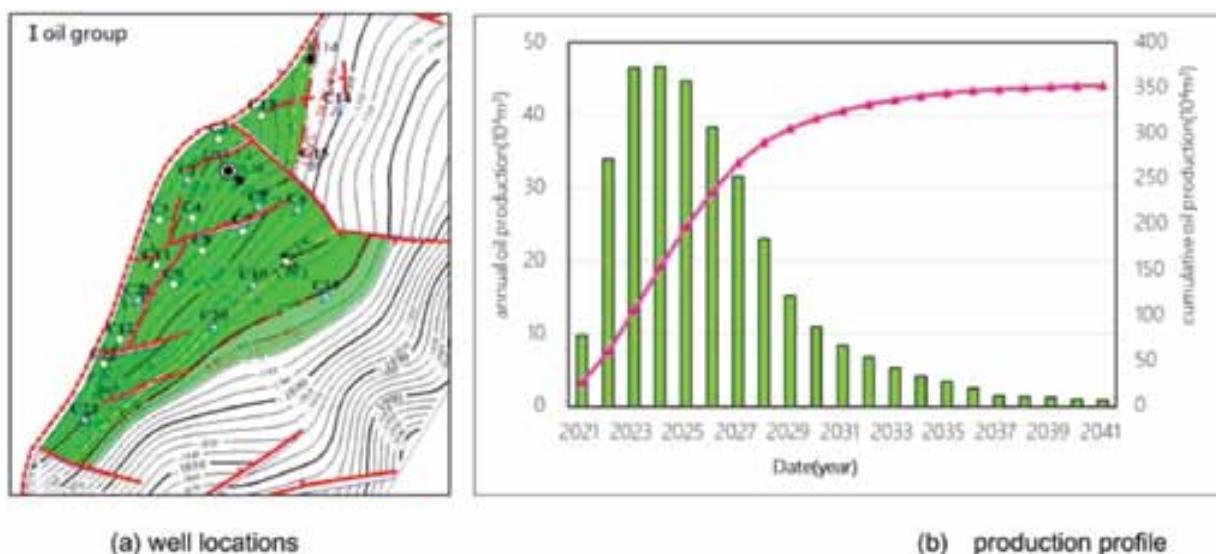


Figure 8—The well locations and production profile of potential development plan

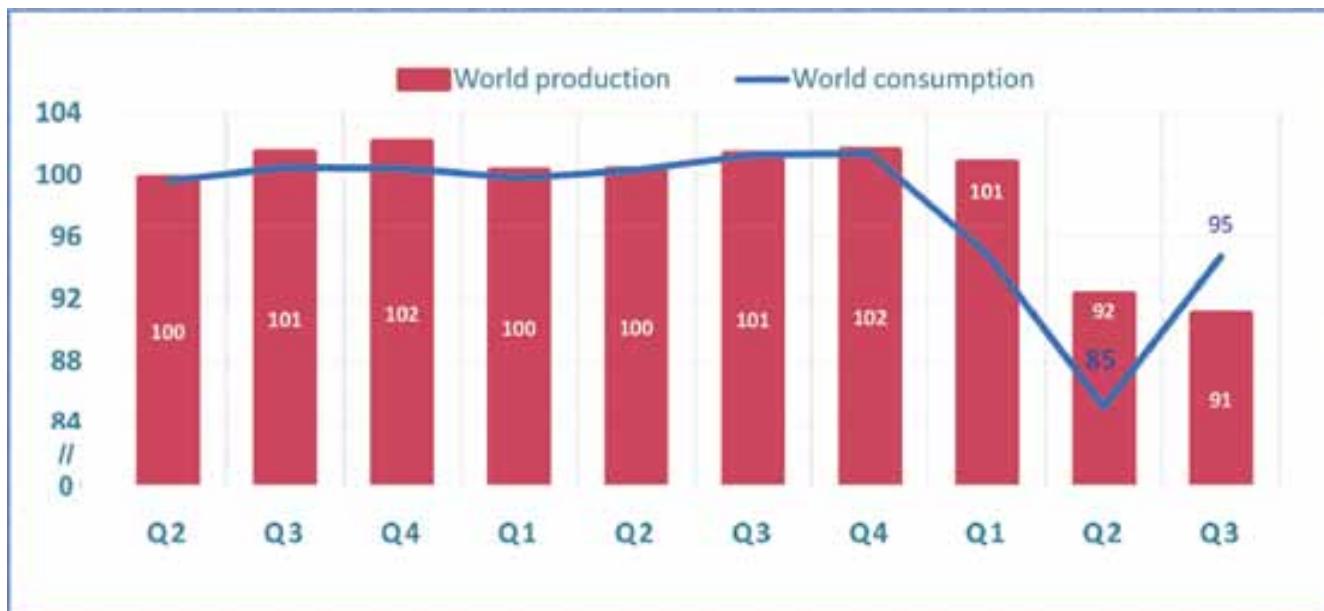
Table 1—Oil index with fluidity data of production well

well	layer	oil group	viscosity mPa·s	per mD	k/ μ mD/mPa·s	oil index $\text{m}^3/(\text{d}\cdot\text{MPa}\cdot\text{m})$
A7d	E ₃ S ₁	I, II, III	2.94	311	106	6.86
A11d	E ₃ S ₁	I, II, III	3.11	169	54	3.40

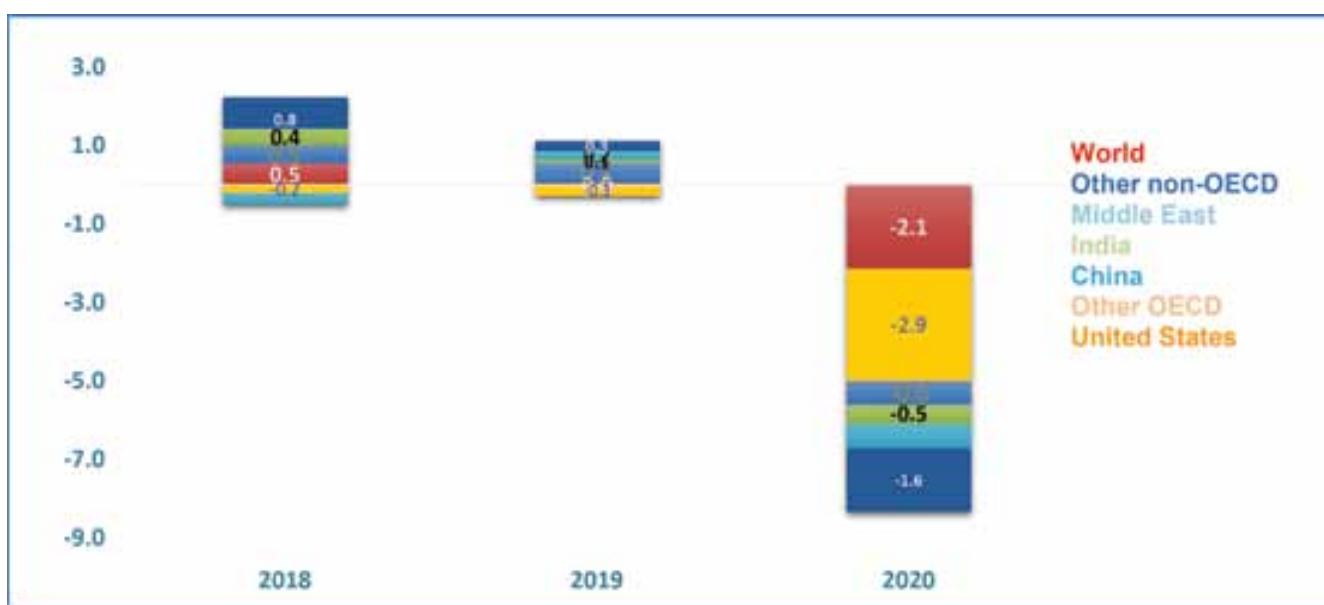
INDUSTRY AT A GLANCE

by: Ali Ibrahim

World liquid fuels production and consumption balance million barrels per day



Annual change in world liquid fuels consumption million barrels per day



OPEC Crude Oil Production

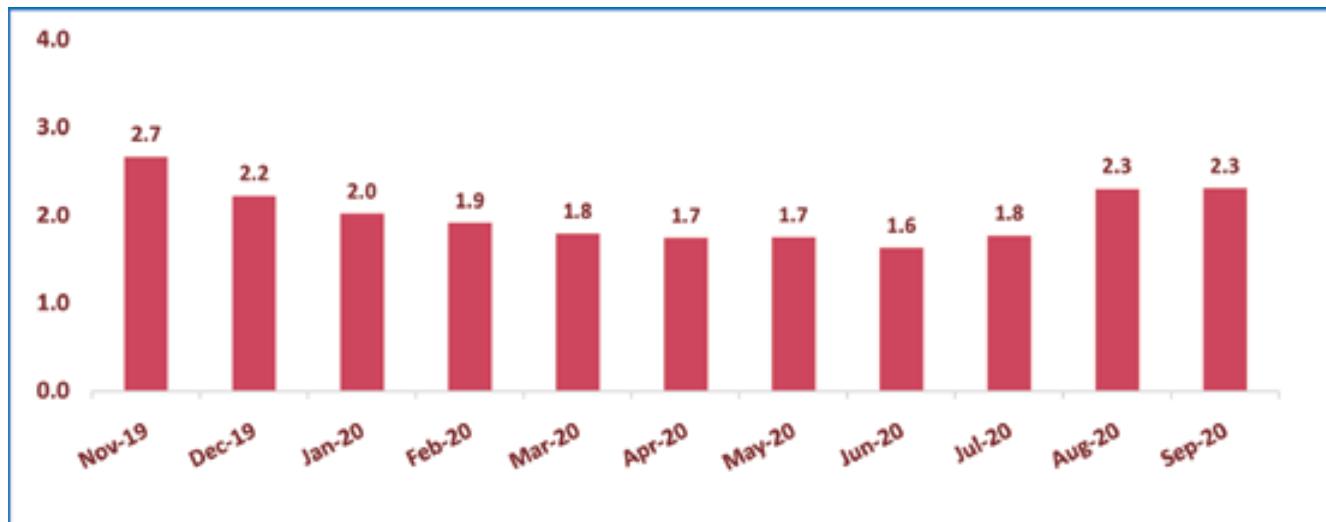


Crude Oil Prices

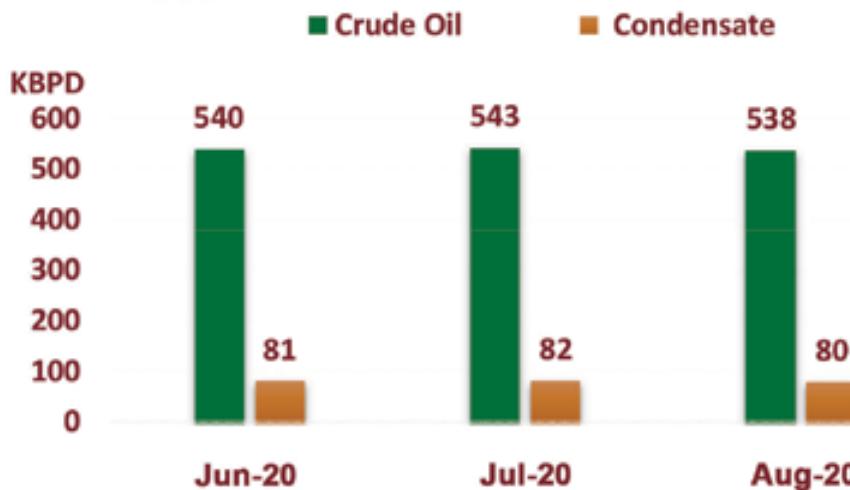


NYMEX Natural Gas Prices

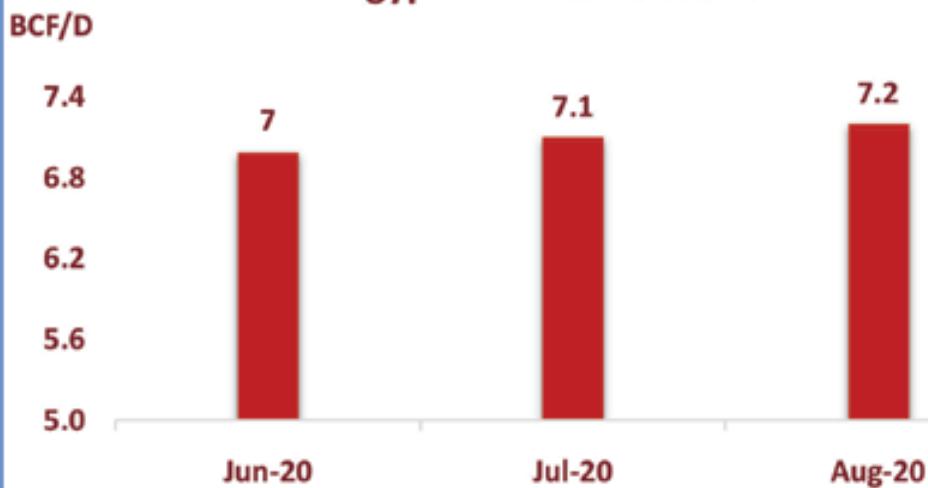
USD/Million BTU



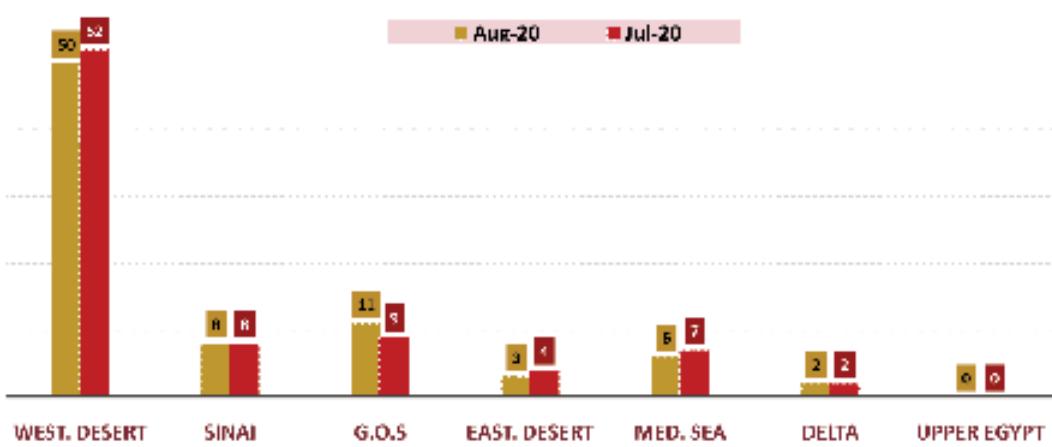
Egypt's Oil and Condensate Production



Egypt's Gas Production



Egypt's Geographical Rig Count



شل تطلق برنامجاً لخفض التكاليف استعداداً للتحول صوب الطاقة المتجددة



تسعى رويداً داتش شل لخفض تكاليف إنتاج النفط والغاز بما يصل إلى ٤٠ بالمئة في إطار برنامج ضخم لتوفير السيولة كي تتمكن من تحديث أنشطتها والتركيز بدرجة أكبر على الطاقة المتجددة وأسواق الكهرباء. ومن المتوقع استكمال مراجعة خفض التكاليف الجديدة هذا العام لتشمل ثلاثة قطاعات رئيسية، وستضاف أي وفورات إلى هدف الأربعة مليارات دولار الذي وضعته الشركة إثر اندلاع أزمة كوفيد-١٩. خفض التكاليف ضروري لخطط شل من أجل دخول قطاع الكهرباء والطاقة المتجددة حيث الهوامش منخفضة نسبياً. ومن المتوقع أن تشتد المنافسة مع شركات المرافق وشركات النفط الأخرى مثل بي.بي وتوتال والتي تنافس جميعها على حصص السوق في ظل تحول الاقتصادات صوب الطاقة النظيفة. وقال مسؤول كبير في شل رفض نشر اسمه "كان لدينا نموذج رائع لكن هل هو مناسب للمستقبل؟ ستكون ثمة اختلافات، ليس فقط فيما يتعلق بالهيكل بل بالثقافة ونوعية الشركة التي نريدها". وفي العام الماضي بلغ إجمالي تكاليف التشغيل في شل ٢٨ مليار دولار والإنفاق الرأسمالي ٢٤ مليار. وقال مصدران مطلعان على المراجعة لرويترز إن شل تبحث سبل خفض الإنفاق على إنتاج النفط والغاز بين ٤٠ و٤٣ بالمئة من خلال خفض تكاليف التشغيل والإنفاق الرأسمالي على المشروعات الجديدة. وأضافوا أن شل تريد التركيز على عدد قليل من المراكز الرئيسية لإنتاج النفط والغاز تشمل خليج المكسيك ونيجيريا وبحر الشمال. وقالت المصادر إن إدارة الغاز المدمجة في الشركة، والتي تضم عمليات الغاز الطبيعي المسال وجزءاً من إنتاج الغاز، تتظرها تخفيضات كبيرة هي الأخرى. وبالنسبة لأنشطة المصب، تركز المراجعة على خفض التكاليف بشبكة محطات البنزين، التي تضم ٤٥ ألف محطة - الأكبر في العالم - وينظر إليها على أنها من أعلى الأنشطة قيمة وينتظر أن يكون لها دور محوري في التحول المزمع، بحسب مصدرين آخرين يشاركان في المراجعة. وقال متحدث باسم شل في بيان "نجري مراجعة إستراتيجية للشركة تستهدف ضمان أن نحقق أزدهاراً على مدار عملية التحول في قطاع الطاقة وأن نصبح مؤسسة أبسط هيكلًا وأكثر قدرة على المنافسة من حيث التكلفة. ندرس العديد من الخيارات والبدائل في الوقت الحالي والتي يجري تقييمها بعناية".

العراق يصدر نفطاً بقيمة ٣ مليارات دولار خلال أول



أعلن في العراق، أن كمية الصادرات النفطية لشهر سبتمبر تجاوزت ٧٨ مليون برميل بقيمة تجاوزت ثلاثة مليارات دولار. وقالت شركة تسويق النفط "سومو" التابعة لوزارة النفط العراقية إن مجموع الكميات المصدرة من النفط الخام من البصرة بلغت ٧٥ مليون برميل بمعدل ٢٥٠٠ برميل يومياً، بإيرادات بلغت ٣ مليارات و٦٠ مليون دولار. وأشارت إلى أن كمية الصادرات النفطية من ميناء جيهان التركي بلغت ٣ ملايين و١٣٣ ألفاً و٨٣٤ برميلاً بمعدل ٤٠٠ ألف برميل يومياً، فيما بلغت الصادرات إلى الأردن ٢٥٤ ألفاً و٧٨٥ برميلاً بمعدل ٨,٥ ألف برميل. وبحسب الشركة النفطية العراقية، فإن معدل سعر البرميل الواحد بلغ ٤٠ دولار. (بترا)

تدريب وصقل خبرات الشباب استثمار المستقبل

تحمل التحديات وتوجيهاته بأهمية تعزيز قدراته وتنمية مهاراته وتشجيع المبدعين والمبتكرين يُشكل دعماً قوياً لعملية تصعيد الشباب واختيار بعضهم في مناصب قيادية قريبة من صناعة القرار كنواب المحافظين ومعاوني الوزراء، وهو ما بدأ تفديه فعلياً في تجربة واحدة وفردية لإكساب الشباب ثقة أكبر ومشاركة فاعلة في تحقيق التطوير المنشود والتنمية المستدامة وعلى الشباب استثماره ، وأكد على أن قطاع البترول تبه لأهمية الاستثمار في البشر وإعداد الكوادر المتميزة علمياً وعملياً وتوفير التدريب اللازم للعاملين من خلال برنامج الإدارة الشابة والمتوسطة بمشروع تطوير وتحديث قطاع البترول والذي يعمل على إعداد قيادات شابة وفق أسس علمية وعملية متقدمة بشكل مستمر والاستفادة منهم. وأشار الوزير بالجهود المتميزة التي تبذلها الأكاديمية الوطنية للتدريب في هذا المجال وما تضطلع به من دور متميز في استكشاف مواهب الشباب وصقله بالتدريب الحديث ومساهمتها في إعداد جيل صاحب فكر متطور ومسلح بالعلم والمعرفة بمتلك المقومات للقيادة وفقاً لرؤية الدولة مصر ٢٠٢٠ .



شارك المهندس طارق الملا وزير البترول والثروة المعدنية رئيساً لاحدي لجان اختبارات المقابلات التواصلي بين المسؤولين والشباب المصري الواعي الذي يتمتع بإمكانات و أفكار تسم بالحداثة والتطور ويصبوا إلى صقل مهاراته مسلحاً بالعلم والارادة ومستمراً الفرصة التي وفرتها الدولة من خلال البرنامج الرئاسي لتأهيل التنفيذيين للقيادة ، الهادف إلى توفير قاعدة كفاءات متميزة لتولي المناصب القيادية. وأشار الملا إلى أن إيمان الرئيس عبد الفتاح السيسي بالشباب المصري وقدرته على لتحقيق التواصلي بين المسؤولين والشباب المصري

الوعي الذي يتمتع بإمكانات و أفكار تسم بالحداثة والتطور ويصبوا إلى صقل مهاراته مسلحاً بالعلم والارادة ومستمراً الفرصة التي وفرتها الدولة من خلال البرنامج الرئاسي لتأهيل التنفيذيين للقيادة بمفر الأكاديمية الوطنية للتدريب وذلك تلبية لدعوة تلقاهما من الدكتورة رشا راغب المدير التنفيذي للأكاديمية، وأعرب عن سعادته بالتواجد في هذه المقابلات الشخصية التي تعد أحد الآليات الهامة

واشنطن وأثينا تتفقان على مشاريع مشتركة للطاقة والغاز في المتوسط

مجال الطاقة في إطار عملية ١ + ٢ . وقال البيان: "أبرزت اليونان والولايات المتحدة شراكة إكسون موبيل مع توتال وهيلينيك بتروليوم في التنقيب البحري في جزيرة كريت ، بالإضافة إلى إمكانية الاستثمار الأمريكي في قطاع الطاقة المتعدد من خلال قانون تحديد قانون البيئة اليوناني الذي تم التصديق عليه مؤخراً". ورحبت الولايات المتحدة واليونان بفتح استثمارات وعمليات استحواذ جديدة من قبل الشركات الأمريكية في اليونان. وأكدوا التزامهم بتطوير هذا الاتجاه ، تقول الوثيقة. وأشار البيان إلى أن البلدين يوليان أهمية كبيرة للتعاون في مجال الذكاء الاصطناعي والأمن السيبراني والجيل الخامس وخصخصة البنية التحتية الاستراتيجية.



مرفق تخزين الغاز تحت الأرض في كافالا، ومشروع الربط بين اليونان ومقدونيا الشمالية، وغيرها خلال الحوار الاستراتيجي القادم. مشاريع مجده تجاري يمكن أن تشمل خط أنابيب الغاز إيست ميد". كما رحب الأطراف بالتأسيس الرسمي لمنتدى غاز شرق المتوسط في ٢٢ سبتمبر منظمة إقليمية واستمرار التعاون الناجح في

قال بيان مشترك أمريكي - يوناني بشأن مراجعة الحوار الاستراتيجي بين الولايات المتحدة واليونان إن البلدين سيناقشان مشاريع الطاقة خلال الحوار الاستراتيجي المقبل. ويعتزز البلدان إجراء الجولة الثالثة من الحوار رفع المستوى في واشنطن عام ٢٠٢١ وجاء البيان بعد اجتماع بين وزير الخارجية اليوناني نيكوس ديندياس وزفير الخارجية الأمريكية مايك بومبيو في سالونيك. ذكر البيان ترحيب "الولايات المتحدة واليونان باستكمال القسم اليوناني من خط الأنابيب عبر البحر الأدريaticي ، وتنطليان إلى مناقشة دعمهما المتباين للربط بين اليونان وبلغاريا ، ومشروع ألكساندروبوليس لإعادة تحويل الغاز الطبيعي المسال إلى غاز في أليكسандروبوليس، وخصوصية

فوز مرشح قطاع البترول بمنحة دراسة الدكتوراه من هيئة التعاون الدولي اليابانية



استقبل المهندس طارق الملا وزير البترول والثروة المعدنية المهندس إبراهيم قشانة مدير إدارة تحسين كفاءة الطاقة بالشركة المصرية القابضة للبتروكيماويات أحد أعضاء مشروع تطوير وتحديث قطاع البترول، بمناسبة فوزه بمنحة الدكتوراه المقدمة من هيئة التعاون الدولي اليابانية (JICA) متوفقاً على ممثلي ١٥ دولة للمشاركة في البرنامج طویل الأجل للدراسة بالجامعات اليابانية تحت عنوان "سياسات الطاقة" في إطار البرنامج الخاص بالدول ، والذى يتم من خلاله اختيار مرشح واحد من كل هذه الدول لنيل "منحة دكتوراه لمدة ٢ سنوات من المعهد القومى لدراسات السياسات" GRIPS باليابان بتمويل كامل من الهيئة اليابانية، تبدأ فى أكتوبر القادم. الترشيح جاء بتنسيق كامل مع وزارة الخارجية التي خاطبت وزارات ومؤسسات الطاقة بمصر ومن ضمنها وزارة البترول والثروة المعدنية، بقواعد البرنامج والتوجيه بملء المرشحين للالستمارة الخاصة ببرنامج الدكتوراه على الموقع الالكتروني للهيئة اليابانية والتواصل مع مكتبها بالقاهرة لاستكمال إجراءات التقديم.

وتطلّب شروط القبول أن يكون المتقدم عاملًا بمؤسسة حكومية معنية بالطاقة في إحدى الدول الـ ١٥ المختارين للبرنامج (مصر - العراق - إيران - ماليزيا - أندونيسيا - باكستان - الفلبين - تايلاند - فيتنام - بنجلاديش - بوتان - سريلانكا - لاوس - ميانمار - كمبوديا) وأن يكون أقل من ٤٠ سنة. وصرح الملا أن فوز مرشح قطاع البترول بمنحة الدكتوراه المشار إليها للحصول على أعلى شهادة أكademie في سياسات الطاقة من دولة رائدة مثل اليابان، يعكس كفاءة

الكوادر البشرية الشابة للعاملين بالقطاع، كما يضيف إلى نقاط القوة لقطاع البترول المصري على المستوى الدولي في ظل تناقض هذا العدد من الدول لنيل درجة الدكتوراه المشار إليها، فضلاً عما لذلك من مردود إيجابي ، حيث تسهم مثل هذه البرامج والدرجات العلمية بشكل كبير في صقل خبرات العاملين ونقل ونشر المعرفة والتكنولوجيا المقدمة داخل القطاع.

بريتشر بتروليوم» تعلن عن اكتشاف جديد للغاز في مصر



يعزز الموارد الحالية والإمكانات المستقبلية لمنطقة النوروس الكبري، الأمر الذي يؤكّد على التزام بي بي تجاه توفير المزيد من مصادر الطاقة لمصر“.

أعلنت شركة «بريتشر بتروليوم» البريطانية «بي بي مصر» عن اكتشاف جديد للغاز في البئر الاستكشافي ندووكو-1 NW في منطقة امتياز غرب أبو ماضي في دلتا النيل. يعد ندووكو-1 NW بئراً استكشافياً يقع في الكيلو ٤ شمال حقل النورس الذي تم اكتشافه في يوليو ٢٠١٥ على بعد ٥ كيلومتر من الشاطئ بمنطقة تسمى «منطقة النورس الكبري». ويتوارد البئر الاستكشافي على عمق ١٦ متراً من المياه على مستوى توقيع تكويني جديد لم يتم مواجهته من قبل في حقل النورس الحالي، وبذلك ترتفع كميات الغاز المتوقعة من منطقة النورس الكبري. «بريتشر بتروليوم» تمتلك حصة تبلغ ٢٥٪ من حصة المقاول في امتياز دلتا النيل، بينما تمتلك إيني حصة تبلغ ٧٥٪ من خلال شركتها الفرعية إيوك. جدير بالذكر أنه سيتم تشغيل الحقل من قبل شركة بتروليوم، وهي شركة مشتركة بين إيوك والشريك الوطني (الهيئة المصرية العامة للبترول). وقال الرئيس الإقليمي لبي بي شمال إفريقيا كريم علاء: «إننا سعداء بالعمل مع شركائنا علي توفير المزيد من الاحتياطيات الغاز والإنتاج وضخه من خلال الشبكة الوطنية المصرية». وتتابع: «هذا الاكتشاف

الرئيس السيسي يفتح مصفاة مصرية للتكرير



العالمية نحو الطاقة النظيفة ، وتطبيق أحدث التقنيات في مجال التحول الرقمي بصناعة التكرير لتحقيق أفضل كفاءة تشغيلية ، وتهيئة مناخ جاذب للاستثمار وتحسين نظم الحكومة ووضع نموذج أمثل للعلاقة التعاقدية بين أطراف أنشطة التكرير وتصنيع البترول ، بالإضافة إلى تحقيق التكامل بين استراتيجية التكرير والبتروكيماويات واستراتيجية قطاع البترول لتحويل مصر إلى مركز إقليمي لتجارة وتداول البترول والغاز ، مما يشير إلى أن الاستراتيجية تبني عدداً من المحاور شملت زيادة طاقة التكرير وتطوير المصافي الحالية ورفع كفاءتها ودعمها بأنشطة تصنيع جديدة لتحويل المنتجات منخفضة القيمة إلى منتجات عالية القيمة علاوة على زيادة كميات الزيت الخام التي يتم تكريرها بالصافى على حساب استيراد المنتجات البترولية إضافة إلى تطوير البنية الأساسية لنقل وتخزين وتداول المنتجات البترولية والعمل على تعطية احتياجات السوق المحلي منها ، الأمر الذي أسهم في تحمل التحديات التيواجهها صناعة التكرير وهي مقدمتها تقادم المصافي وعدم قدرتها على توفير منتجات بترولية عالية القيمة والفجوة بين الإنتاج والاستهلاك وارتفاع معدلات الاستيراد إلى أكثر من ١٢ مليون طن سنوياً ..

افتتح السيد الرئيس عبد الفتاح السيسي رئيس الجمهورية مشروع مصفاة المصرية للتكرير في منطقة مسطرد بالقاهرة الكبرى ، والذي يعد واحداً من أهم وأكبر مصافي تكرير البترول وأكثرها تقدماً على المستوى التكنولوجي في مصر وأفريقيا ويأتي في إطار خطة وزارة البترول والثروة المعدنية لزيادة الإنتاج والوصول إلى الابقاء الذاتي من المنتجات البترولية عبر التسعة في إقامة مشاريع جديدة متطرفة لتكرير وتصنيع البترول. حضر الافتتاح الدكتور مصطفى مدبولي رئيس مجلس الوزراء والمهندس طارق الملا وزير البترول والثروة المعدنية وعدد من وزراء الحكومة وكبار رجال الدولة. وتبع الرئيس السيسي والحضور خلال الافتتاح عرضاً توضيحيًّا للمهندس طارق الملا وزير البترول والثروة المعدنية ألقى خلاله الضوء على استراتيجية تطوير البنية الأساسية لمصر في مجال تكرير وتصنيع البترول والدور الحيوي للمشروع الجديد في هذا الإطار ، حيث أكد على أهمية الدعم الذي يوليه الرئيس لقطاع البترول كأحد الروافد الهامة للاقتصاد الوطني للدولة وأنه وراء ما تحقق من إنجازات خلال السنوات السنتين الماضية والتي شهدت إشادة دولية من كافة المتخصصين في هذا المجال ، واستعرض موقف مصافي التكرير في مصر خلال عام ٢٠١٤ وأنها كانت توفر ١٢٥ مليون طن منتجات في حين أن الاستهلاك كان يصل إلى حوالي ٢١ مليون طن سنوياً ومن ثم كانت الحاجة لزيادة الإنتاج محلياً وتم إعداد استراتيجية لتطوير وتحديث مصافي التكرير وزيادة الطاقة التكريرية وتطوير البنية الأساسية من خلال مجموعة من المشروعات ومنها مشروعات توسيعات الطاقة التكريرية في الإسكندرية ومشروع مصرية للتكرير وللذين أصحاباً ٤٠ مليون طن للمنتجات الرئيسية بتكلفة حوالي ٧٤ مليار جنيه. وأوضح الملا أن استراتيجية تحديث قطاع التكرير التي بدأت عام ٢٠١٨ تأتي ضمن مشروع تطوير وتحديث القطاع وأن أهدافها تمثل في مواكبة المتغيرات المحلية والعالمية في صناعة التكرير والتوجهات

مفاوضات وزير البترول مع نائب رئيس شركة نافتجاز الأوكرانية

عن البترول والغاز في مختلف مناطق مصر البرية والبحرية في ظل المناخ الجاذب للاستثمار وحرص الحكومة المصرية على اتخاذ إجراءات لتحفيز الشركات العالمية لزيادة تواجدها داخل مصر وضخ مزيد من الاستثمارات في أنشطة البترول والغاز في ضوء الفرص الواعدة والمؤشرات والنتائج المتميزة التي تتحقق في هذه المجالات خلال الفترة الأخيرة.

وتتجدر الإشارة إلى أن الشركة الأوكرانية هي الشريك الأجنبي لشركة بتروسنان بالصحراء الغربية وتعمل في منطقتي امتياز وادي المحاريث وجنوب وادى المحاريث بشرق وادى النيل بجنوب مصر. شارك فى جلسة المباحثات الجيولوجى أشرف فرج وكيل أول الوزارة للاتفاقيات والاستكشاف والمهندس عابد عز الرجال الرئيس التنفيذي لهيئة البترول والمهندس علاء البطل رئيس شركة جنوب الوادى المصرية القابضة للبترول.

التقى المهندس طارق الملا وزير البترول والثروة المعدنية مع السيد سيرجي بيرلوما النائب الأول لرئيس مجلس إدارة شركة نافتجاز الأوكرانية والوفد المرافق له ، حيث تم خلال اللقاء استعراض أنشطة الشركة الحالية في مجالات البحث والاستكشاف وإنتاج البترول والغاز بمنطقة الصحراء الغربية وجنوب مصر، وبحث سبل زيادة مجالات التعاون خلال الفترة المقبلة ، خاصة وأن هناك رغبة قوية من الشركة الأوكرانية فى المشاركة فى المزايدات التى سيتم طرحها للبحث عن البترول والغاز، والتتوسع فى الاستثمارات المشتركة من خلال مجالات التعاون الجديدة فى المشروعات البترولية ، والعمل على تعميق المنافع الاقتصادية المشتركة. وأوضح الملا أنه تم خلال اللقاء استعراض الفرص الاستثمارية المتاحة فى مجالات البحث والاستكشاف

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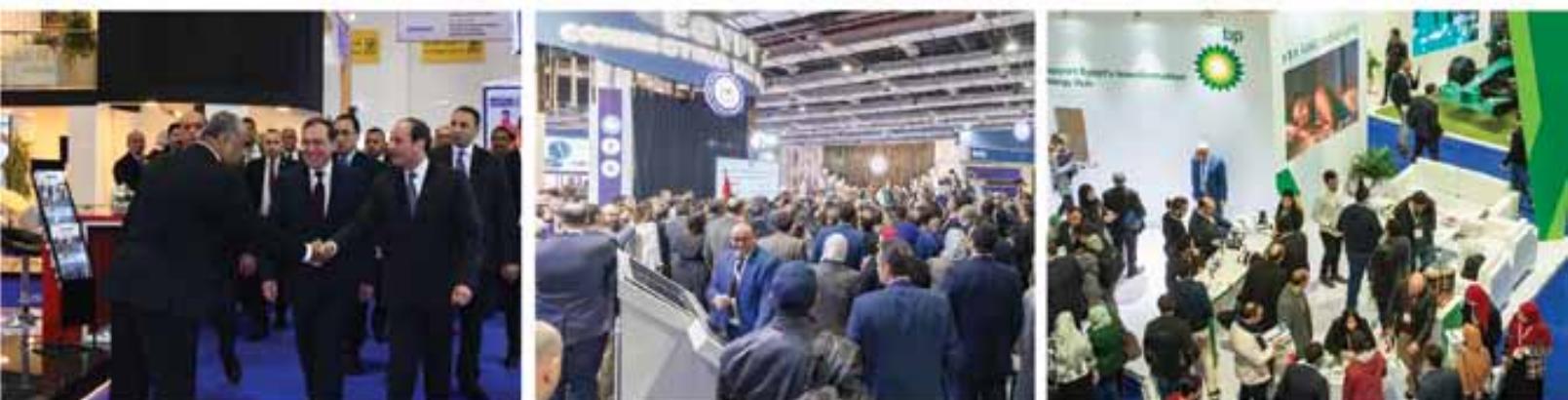
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