The Kuwaiti Digest

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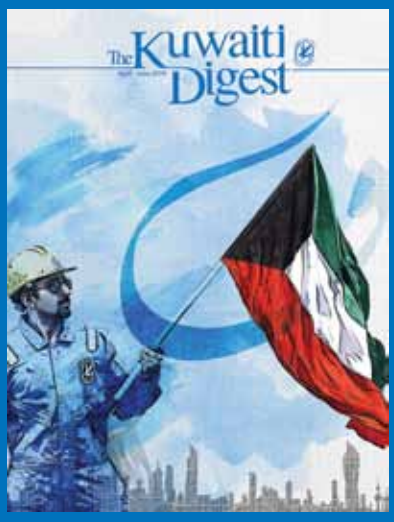

The Kuwaiti Digest is a quarterly magazine published by the Kuwait Oil Company (K.S.C.) since 1973.

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Letter from the Editor

Saad Rashed Al-Azmi
Deputy CEO
(Administration & Finance)

As we look back on the first quarter of 2014, I can assure all KOC employees and Company partners that we have much to be proud of. As part of one of our longstanding traditions, KOC was instrumental in helping Kuwait celebrate the National and Liberation Day holiday by setting up an impressive display of lights and ornaments throughout Ahmadi. These decorations were enjoyed by thousands of families who made the journey to Ahmadi to see the show of lights which we work so hard to provide. It was indeed a joyous occasion for all, and we of course look forward to further improving our efforts next year.

There is also much to be proud of in terms of accomplishments that the Company has witnessed. Over the last quarter, KOC has come closer to completing the New Ahmadi Hospital, hosted the Global Oil Gas Conference and Exhibition, and attended a number of local and international oil and gas conferences, where we have gained valuable knowledge in addition to sharing our own extensive oil and gas experiences and expertise with others. From the KOC Technology Day to our participation at the 2nd Enterprise Risk Management Conference, our employees are developing the skills they need to turn our 2030 Strategy into reality while doing everything in their power to safeguard our environment. From new, high tech plans for disaster recovery and business continuity to improved subsurface management techniques, KOC's engineers, geologists and technical specialists continue to offer new and improved methods for the Company to conduct its business and operations. A large part of successfully achieving the 2030 Strategy relies on staying current with emerging technologies, and KOC plans to adopt these new and useful technologies as they become available.

With a close eye on our future goals and targets, it gives me great pleasure to commend KOC employees for their efforts in helping to transform KOC into a larger, safer and more efficient exploration and production company. Your hard work has enabled KOC to usher in a range of new accomplishments in terms of Health, Safety, Security and the Environment, and each of you will have an opportunity to be noticed for you contributions in the upcoming CEO HSSE Award Ceremony, which I look forward to attending.

While our goals for the future include raising production to 4 million BOPD by 2020, KOC remains committed to adhering to the protection of the health and safety of both its employees and the population at large. In addition, the Company's commitment toward the environment and giving back to the community remains strong, and we look forward to making more positive contributions over the next quarter.

It is my sincere wish that our commitment to KOC and the State of Kuwait remains as strong as ever as we continue our work to be a responsible provider of energy to the world.

International Event

KOC Organizes Global Oil & Gas Conference & Exhibition

KOC CEO Hashem S. Hashem recently inaugurated the Global Oil & Gas Conference and Exhibition (GOGCE), which was held at Hall No. 8 of the International Fairgrounds in Mishref. The event, previously referred to as the KOC Town Hall Meeting, is an annual event which has the stated objective of strengthening business partnerships with KOC's contractors and subcontractors, with the end goal being the achievement of excellence in performance which is in line with KOC's strategic objectives. This year's event also served as an excellent opportunity for KOC to exchange views with the community and provide them with information about KOC activities and operations.

On the sidelines of the conference, officials maintained that the theme of this year's event, "Success through Synergy", seeks to raise awareness about KOC's strategic goals and future plans, in addition to highlighting the latest technologies in the oil and gas industry. Before the official inauguration of the exhibition occurred, senior staff and members from the press gathered in one of the hall's auditoriums while senior staff delivered their opening remarks to the audience.

In his opening remarks, Hashem affirmed that KOC has a long-standing relationship with its partners, and he emphasized the importance of the continuity of this relationship for the advancement of the oil sector amid the challenges it is faced with.

KOC CEO Hashem Hashem and senior officials inaugurate the conference.

"Partnering has proven itself to be one of the most powerful business tools for dealing with changing markets, technologies and customers. As the global economy speeds up, partnering is becoming the weapon of choice for today's successful competitors," he said, adding that the Company's efforts are ongoing in terms of implementing its strategic target of increasing production to 4 MBPD by 2020 and sustaining that until 2030, which, he said, is not a challenge to be taken lightly.

Hashem also maintained that KOC is focused on the deployment of cutting edge technological solutions and innovative business models and tools, stating that it was necessary for KOC "to maintain this competitive edge so that we make best use of our billions of dollars of investments in the continuous development of our oil industry."

The KOC CEO also called on the Company's partners to collaborate with KOC and with each other in order to achieve its aspirations. "It is absolutely critical for KOC that our partners form alliances and complement each other's strengths to provide the best solutions possible," he said.

Following the CEO's speech, Mamoon Al-Ghawas, Acting Manager of the Contracts Group, delivered his remarks and upheld the importance that KOC places on focusing on cooperation when tackling the large challenges it faces. The role that KOC's contractors have played in the Company's growth and development has been substantial, and Al-Ghawas cited this cooperation as one of the reasons for KOC's recent successes.

The Acting Manager then discussed the changes that are occurring in the oil and gas industry.

Senior officials are given a tour of the exhibition hall.

In his opinion, it is necessary that KOC keep track of such changes and demonstrate leadership as well as partnership objectives in order to achieve Company goals. He also encouraged KOC's contractors to put forth their best efforts in order to support KOC's objective of emerging as a regional leader that sets an example of excellent business partnerships for others to follow.

"We strongly believe in sharing information and best practices with our sister companies and national oil companies throughout the GCC through regular meetings and forums. We, in line with the latest global oil industry practices, have employed a new range of innovative new business models and tools encompassing new technological and business developments," Al-Ghawas said. In this regard, he cited the E-Business and Enterprise Asset Management System (E-Beams) which went live in January, 2011 and replaced the earlier Materials Management System. This, he maintained, will allow the Company to make use of leading technology that will enable KOC to have a comprehensive focus and investment in key assets that are directly associated with revenue generation. He also said that KOC's ever improving portal is aimed at assisting employees in managing activities within KOC, such as self-registration, pre-qualification, e-tendering processes and information about future KOC projects.

The Acting Manager then thanked KOC's parters for their "continuous efforts and dedication to KOC's mutual partnership, which enables the Company to achieve the goal of emerging as an example of success to all our competitors."

Following the event's opening remarks and speeches, the conference was officially opened by cutting a ceremonial ribbon, which marked the launch of GOGCE. Over the three days that the exhibition took place, KOC employees, KOC's partners, and visitors from around the world were able to come together for an exchange of new and innovative ideas. The conference and exhibition, in part, sought to identify how KOC and its trusted partners can work together to address challenges in ways that are feasible, efficient, economical and - most importantly - safe for people and the environment. As KOC advances towards its upstream goals of maximizing the strategic value

The KOC CEO inside the exhibition hall with a group of students.

from oil, realizing the potential of gas and growing reserves for a sustainable future, the Company continuously seeks to emphasize the importance of cooperation with its partners, which helps KOC achieve those goals.

GOGCE at a Glance:

The objective of GOGCE was to strengthen the partnership between KOC and its contractors/ suppliers and raise awareness of KOC's strategy, system and new projects. This will help the Company attain broader business relationships and knowledge-based expansion. The event will support the strategy of KOC's day-to-day activities and create general public awareness for KOC. The event also aimed to bring KOC's staff and others the knowledge regarding the latest techniques, material, equipment and services related to the oil industry, as well as introduce the Company to new members of the public community.

The event itself showcased KOC's main groups, KOC's contractors and suppliers and some local universities and private institutes. The activities of this event were distributed over a three day period in March, with many exciting and informative speeches and activities being held.

The opening of the event started with speeches from the CEO and KOC officials, as well as from officials from outside the Company. This was followed by a question and answer session that was held between KOC officials and the contractor community. After the opening of the exhibition, exhibitors from KOC's key groups, contractors and other parties were on hand to talk about their respective activities. Prototypes and display materials were also present for display and explanation.

During the conference, a number of presentations and papers were presented by select KOC groups, as well as contractors and suppliers specialized in providing works, services, material and equipment to the oil and gas industry. The presentations made by KOC highlighted specific projects and lessons learned as well the specifics of KOC's 2030 Strategy.

At least 62 local, Arab and international companies took part in the exhibition and 26 technical papers were presented, with KOC submitting 14 of those papers.

A partial list of some of KOC's partners who took part in GOGCE:

- Al-Khorayef Company
- AMEC Global
- Baker Hughes
- Consolidated Contractors Co.
- Dar Al-Jazera Consultants
- Emerson Process Management
- Gulf Healthcare International
- Halliburton
- Al-Kharafi National
- Kuwait Drilling Company
- Kuwait University
- Schlumberger
- Weatherford

National Event

National and Liberation Day Celebrations

KOC CEO Hashem S. Hashem recently inaugurated Ahmadi's lightings and decorations on the advent of KOC celebrations for National and Liberation Day. A number of KOC and government officials were also present.

Hashem maintained that this year's decorations were distinguished by lighted structures which symbolized the history of Kuwait, such as a traditional tent, the Old Kuwait Wall, Kuwait Towers, the Liberation Tower and a number of structures that embodied the past and present in the State of Kuwait.

During the event, Hashem invited citizens and expatriates to visit Ahmadi with their families to enjoy the city's festive atmosphere. He also expressed his greetings and appreciation to the people of Kuwait on the occasion of the National and Liberation Day celebrations. He added that the national celebrations were a deep-rooted tradition observed by KOC and that the Company has been engaged with decorating the city for many years as part of its social responsibilities, and that this year's decorations reflected a traditional aspect of the State of Kuwait's history.

Preparations for the occasion begins early every year by setting-up concepts and preparing relevant contracts before adopting the needed specifications in order to be ready for Kuwait's most important national celebrations.

A Brief History of Kuwait

Archaeological finds on Failaka, the largest of Kuwait's nine islands, suggest that Failaka was a trading post at the time of the ancient Sumerians. Failaka appears to have continued to serve as a market for approximately 2,000 years, and was known to the ancient Greeks. Despite its long history as a market and sanctuary for traders, Failaka appears to have been abandoned as a permanent settlement in the 1st century A.D.

Kuwait's modern history began in the 18th century with the founding of the city of Kuwait by the Utaiba, a subsection of the Anaiza tribe, who are believed to have traveled north from Qatar.

Threatened in the 19th century by the Ottoman Turks and various powerful Arabian Peninsula groups, Kuwait sought the same treaty relationship Britain had already signed with the Trucial States (U.A.E.) and Bahrain. In January 1899, H.H. Sheikh Mubarak "The Great" Al Sabah signed an agreement with the British Government that pledged himself and his successors neither to cede any territory, nor to receive agents or representatives of any foreign power without the British Government's consent, in exchange for protection and an annual subsidy. When Mubarak died in 1915, the population of Kuwait of about 35,000 was heavily dependent on shipbuilding (using wood imported from India) and pearl diving.

Mubarak was succeeded as ruler by his sons Jaber (1915-17) and Salem (1917-21). Kuwait's subsequent rulers have descended from these two brothers. H.H. Sheikh Ahmed Al-Jaber Al-Sabah ruled Kuwait from 1921 until his death in 1950, a period in which oil was discovered and in which the government attempted to establish the first internationally recognized boundaries; the 1922 Treaty of Uqair set Kuwait's border with Saudi Arabia and also established the Kuwait-Saudi Arabia Neutral Zone, an area of about 5,180 sq. km. (2,000 sq. mi.) adjoining Kuwait's southern border.

Kuwait achieved independence from the British under Sheikh Ahmed's successor, Sheikh Abdullah Al-Salem Al Sabah. By early 1961, the British had already withdrawn their special court system, which handled the cases of foreigners resident in Kuwait, and the Kuwaiti Government began to exercise legal jurisdiction under new laws. On June 19, 1961, Kuwait became fully independent following an exchange of notes with the United Kingdom.

Kuwait enjoyed an unprecedented period of prosperity under H.H. Sheikh Sabah Al-Salem Al-Sabah, who died in 1977 after ruling for 12 years. Under his rule, Kuwait and Saudi Arabia signed an agreement dividing the Neutral Zone (now called the Divided Zone) and demarcating a new international boundary. Both countries share equally the Divided Zone's petroleum, onshore and offshore. The country was transformed into a highly developed welfare state with a free market economy.

In August 1990, Iraq attacked and invaded Kuwait. Kuwait's northern border with Iraq dates from an agreement reached with Turkey in 1913. Iraq accepted this claim in 1932 upon its independence from Turkey. However, following Kuwait's independence in 1961, Iraq claimed Kuwait, arguing that Kuwait had been part of the Ottoman Empire subject to Iraqi overview. In 1963, Iraq reaffirmed its acceptance of Kuwaiti sovereignty and the boundary it agreed to in 1913 and 1932, in the "Agreed Minutes between the State of Kuwait and the Republic of Iraq Regarding the Restoration of Friendly Relations, Recognition, and Related Matters."

Following several weeks of aerial bombardment, a UN-mandated coalition led by the United States began a ground assault in February 1991 that liberated Kuwait. During the 7-month occupation by Iraq, the Amir, the Government of Kuwait, and many Kuwaitis took refuge in Saudi Arabia and other nations. The Amir and the government successfully managed Kuwaiti affairs from Saudi Arabia, London, and elsewhere during the period, relying on substantial Kuwaiti investments available outside Kuwait for funding and war-related expenses.

Following liberation, the UN, under Security Council Resolution 687, demarcated the Iraq-Kuwait boundary on the basis of the 1932 and 1963 agreements between the two states. In November 1994, Iraq formally accepted the UN-demarcated border with Kuwait, which had been further spelled out in UN Security Council Resolutions 773 and 883.

Internal Event

KOC Organizes Second Technology Day

We must be open to new ideas and innovation

KOC recently organized the Company's second Technology Day at the Jumeirah Messilah Beach Hotel. The event, which was attended by a large number of KOC employees and guest speakers, included a presentation of technical papers and information regarding projects jointly implemented by the Research & Technology Group and other groups within the Company.

The Second KOC Technology Day demonstrated the important role that modern technology plays in the oil industry. Because many of the technological tools used in the oil industry today are very different than the tools used in the past, it is extremely important for large companies like KOC to adapt with the times and adopt new methods for oil exploration and production. In addition to making many of KOC's operations easier and more efficient, advances in technology can do much more than simply streamline oil exploration and production.

One of the more advantageous benefits of newer technologies is that many leave a smaller footprint on the environment – in other words, they help reduce waste and decrease the amount of pollution generated from older technologies. In addition to making operations cleaner and more efficient, there is also an economic advantage to newer technologies in the sense that they can cut costs by cutting down on the time needed to conduct tasks or introduce entirely new – and less expensive – methods of exploration and production.

In his address to the audience, KOC CEO Hashem S. Hashem asserted that technology plays a crucial role in improving performance and enhancing operations within KOC. This, he maintained, was especially true in light of the mounting challenges facing the oil and gas sector today.

"The KOC Technology Day symbolizes the importance the Company attaches to the development of KOC's fields and capabilities," he said. "Our technical capabilities shall continue to grow with the contribution of our employees to meet the strategic objectives of the Company, and we are wholeheartedly committed to support and invest in the right projects that promise reservoir growth, improved recovery, enhanced safety of all resources and an enriched image of the Company. The focus of the management is to continuously promote appropriate technologies. In this pursuit, the Company opens its doors to all parties with the right skills and knowledge to join hands with us," the CEO said, referring to KOC's cooperation with outside parties who can lend their expertise and experience to Company operations.

The CEO went on to say that KOC's Research and Technology Group has established a Technology Protocol that offers optimum direction through an agreed framework that deals with the completion of a project while considering its technology life cycle, resources and investment. "This protocol," he said, "is expected to help achieve objectives in a precise manner with a set of goals, methodology and commitment." He went on to say that "R&T has made its mark in diverse fields, including advanced completions, KwIDF (Integrated Digital Field), an advanced reporting system (SAHALA), microseismic technology for reservoir fluid monitoring, 3D/3C seismic data processing and reservoir characterization for both heavy oil of South Ratqa and Jurassic reservoirs of Sabriyah Field and the Real-Time Drilling Decision Center (RTDDC)."

A group photo of event organizers and participants.

The KOC booth allowed visitors to learn more about Company projects.

Following the CEO's speech, Research and Technology Group Manager Yousef Abdulrahman delivered his opening remarks and upheld the importance that KOC attaches to the role of technological capabilities in achieving its 2030 Strategy production targets.

"Combining technology, institutional and manpower strengths are a key to success and meeting current and emerging challenges. It is established that a substantial percentage of production, as set by the 2030 Strategy, is expected to be delivered through new technologies. This requires solid cooperation and collaboration between all stakeholders involved in the value chain," he said.

The R&T Manager maintained that the KOC Technology Day was an occasion to recollect and reflect on the achievements of the Company, which are partly credited to the adoption of the latest technologies in the oil and gas industry. He also acknowledged the cooperation between vendors, assets, contractors and stakeholders which have played a part in the path to the successful completion of the 2030 Strategy. Collaboration with these parties he, said, has improved methodologies related to exploration, production optimization, heavy oil, and enhanced oil recovery.

Abdulrahman added that the event was "an opportunity to share KOC employees' technical achievements and report successful stories on the role of technology with the rest of the Company. This year, the event recognizes the establishment of the R&D Center, which adds another tool to our existing Technology Kit," he said.

Senior officials listen to opening statements.

According to KOC's CEO, technology is changing at a very rapid pace. Globalization has resulted in changes in the rules of business and rules of the use of technology. If KOC aims to stay ahead of technology leaders, as it should, it must be open to new ideas and innovation. In addition, KOC should be able to learn from experience and stay abreast in choosing the right technology at the right time. Developing strong ties with knowledge-based institutions and companies in order to fulfil Company demands is necessary, he maintained, adding that R&T and R&D are developing strong partnerships with major service companies and academia for Joint Industry Projects and consortia. KOC management encourages such moves as the Company needs to convert ideas into reality, patents and publications. The development of technology shall be a continuous process and any failure shall not be a deterrent to KOC's endeavors. An integrated approach and long term vision will help build scientific talent and improve production, the CEO said, concluding that he was confident that KOC's resources will be able to convert challenges into new opportunities.

Objectives of the KOC Technology Day are as follows:

- The adoption of new technologies in order to meet the fifth strategic goal of the 2030 Strategy while creating awareness of the importance of research related to Research & Technology

- To encourage employees to publicize their achievements, share their experiences, and engage in teamwork within KOC and outside the Company

- The creation of a structure to reward successful employees

A brief recap of the important points covered during the KOC Technology Day:

• Technology enables KOC to improve performance and enhance operations in light of the challenges faced by the Company

• The new Research and Development Center will serve as a major resource for the Company

• KOC has made many achievements in reservoir management and has kept abreast with advancements in technology

• The Company is very aware of its role in society and is keen to apply new technologies that will help it live up to its responsibilities toward the environment

February, 1960

Kuwait Oil Company's Ahmadi Hospital Nears Completion

Work on Kuwait Oil Company's hospital in Ahmadi, begun in June, 1958, is now nearing completion and the commissioning of the new building is only a matter of two months away. Just what has been achieved in the 20 months during which the site has been in the hands of the contractors is not entirely and immediately evident to the eye, although the presence of the new blocks of buildings situated north of the Industrial Area and west of the Main Office can be noted by all who drive along Sixth Avenue West or along Main Street. Access roads are ready also to be opened when the day arrives and the main approach to the hospital itself will be via a westward extension of Eighth Avenue and, to the Outpatients' Department, via a new road running north from just east of the Payroll Employee Divisional offices.

The Main Entrance to the new KOC Hospital

Fifteen years ago employees of KOC had no hospital of their own and medical services were provided by the American Mission Hospital. The temporary facilities were provided in buildings adjoining the then Main Office in Kuwait Town while the present Magwa Hospital was being completed. And since 1948 hospitalization for KOC employees has been at Magwa though considerable facilities for outpatients in Ahmadi itself were provided as the new town grew.

Now the final touches are being put to the magnificent modern hospital in Ahmadi although there is still much work to be done, not least in equipping and furnishing all the hundreds of rooms. To go around the hospital is, in fact, to realize that it is in itself a small town requiring all the services of any community plus some very special ones. Power, lighting, cooling, heating, water, gas, are perhaps obvious needs but in a hospital they take on added importance and nothing has been neglected to ensure that these are of the best.

To go over the new buildings is to realise that space and light have been two of the biggest considerations, with the maximum of centralisation as the guiding aim. Thus the administrative offices sit in the middle over the main entrance and the various wards are "off" to the north and to the south. It is almost certain that someone will get "lost" in the first few days after the new hospital is commissioned. Even the Clerk of Works who was kind enough to show me round, lost his bearings once and he has lived with the new buildings since they began!

Considerable thought has been given to the question of "finish" and the colour schemes will be found to be bright, cheerful and restful. The use of Italian marble and of mosaic tiles in black and grey, green and white and in yellow give a pleasing effect, while some very fine work has been done on wood paneling and in other timber finishes.

The hospital will have its internal telephone exchange and, in addition, has an internal communications system whereby written messages are carried from one part to another by means of tubes – rather like the system used in some multiple stores for sending bills to the cashier for payment and getting change back, except that this is not an "overhead" system but is concealed.

The very latest sterilizing plant, a modern laundry, a spacious and comprehensively equipped kitchen, catering for the needs of patients from all communities, staff restaurant, pathological laboratories, pharmacy, cold chambers, medical stores, a water softening plant – these are just a few of the adjuncts to the new hospital.

There is a convalescent wing, a physiotherapy centre where a special semi-sprung floor in which rubber buffers have been used will assist patients undergoing rehabilitation exercises, and an occupational therapy centre.

Nothing has been forgotten. Apart from the twin operating theatres there is an audiometry room and an eye theatre, X-ray rooms with lead-lined panels and their own dark room, a shop catering for the needs of patients and a library.

Child patients should be particularly comfortable in their wing where things have been "cut down to size" with low level toilets, basins, etc. as features.

Access to the first floor is provided by staircases of which there are four, and by three lifts while there is also an emergency non-skid inclined ramp.

There is no space here to go into great detail but mention should be made of the special automatic fire shutters which will shut off one wing from another at the first suggestion of smoke. Cleaning won't be such a hardship either: a special vacuum system will suck all dust etc. clean out of the building.

Meanwhile we ask readers to remember that the construction work is not finished and to remind them that they should not visit the site except by arrangements as detailed in these columns three weeks ago.

The architects and engineers for the hospital project are Messrs Huckle & Durkin and the contract was let by competitive tenders, the successful main contractors being Messrs Contracting & Trading Company with Messrs Brightside Heating and engineering Company, the successful services subcontractor.

Current Projects

New Ahmadi Hospital Comes Closer to Completion

Kuwait Oil Company has a long history of caring for its employees and their families, which was exemplified, in part, in 1960 when the Company opened Ahmadi Hospital. Later, in the 1980s, a decision was made to open Ahmadi Hospital's doors to the entire oil sector, a decision which greatly benefited a large number of individuals but also placed an increase amount of traffic and responsibility on the aging hospital.

Today, Ahmadi Hospital offers a wide range of medical treatment and related services, including Accident & Emergency, General Practice, Internal Medicine, General Surgery, Orthopedics, Dermatology, Obstetrics & Gynecology, Pediatrics, Ophthalmology, Ear, Nose & Throat, Dentistry, Preventative Medical Services, Radiology, Anesthesia, an Intensive Care Laboratory, Physiotherapy, and Dietary Services. In addition, consultative clinics are conducted once a week by consultants from the Ministry of Health.

There is no doubt that Ahmadi Hospital has done a commendable job of caring for oil workers for more than 50 years; however, KOC recently decided that the time was right to offer a new and modern hospital complex with the latest in medical technologies. This new facility has the ambitious goal of catering not only to all KOC and oil sector families, but also to the residents of Ahmadi, whose surrounding area has a population of 394,000.

The New KOC Ahmadi Hospital and residencies will occupy a four-story building that has a combined floor space of approximately 80,000 square meters which provides room for 300 beds with provision for a 100 bed future expansion wing and a fully serviced medical facility that encompasses all services. The new residential facility on the site consists of five buildings which are approximately 10,000 square meters each on two levels which incorporate a total of 254 studio apartments complete with surface parking for resident doctors and nurses.

The construction contract for the hospital was awarded to Sayed Hamid Behbehani & Sons Co (SHBC) as a fixed price lump sum contract with the electrical and mechanical works to be undertaken by the electrical and mechanical division of SHBC. The contract value is KD 86.4 million, which includes the construction of the hospital, procurement and installation of medical equipment, fixtures/fittings and facility maintenance and management for one year post completion.

Approximately KD 19 million has been allocated for the procurement of up to 11,000 medical items ranging from high-tech MRI scanners to wheelchairs. All in all, this equipment will provide a state-of-the-art hospital that will serve the Kuwait oil sector well into the future.

As with all KOC projects, health and safety is a key requirement of the contract and the aim is to complete the project without incident. In March of 2012, the project was ahead of schedule at 8% complete with approximately 800,000 man hours worked without lost time injury. Today it is more than 65% complete and set to receive patients by the end of 2014.

Unique Architecture

The New Ahmadi Hospital has an innovative and functional design that is sensitive to regional and Islamic principles and traditions, as well as reflecting local environmental conditions. It incorporates state-of-the-art technology as well as a high-tech energy and water conservation system. It has also been created with future growth and expansion in mind.

The design of the hospital, undertaken by Langdon Wilson International in association with Gulf Consult, is a unique architectural response to the site. The buildings and parking area, for example, are protected with impenetrable windbreaks. The hospital also has deeply recessed windows with sunscreens and light shelves, as well as exterior gardens, terraces and verandas.

The footprint of the hospital is derived from the Islamic geometric form of a circle evolving into a rotated square which then forms an eight sided star. The first triangle houses the lobby. To the west of the lobby is the clinic, and to the east two nursing bed towers are found, which are enclosed by gardens on the ground

floor where the administrative functions are carried out and a staff entrance is located.

The exterior of the building is natural stone, precast concrete and metal. Energy efficient, low emissivity, blue-green glass has been utilized. The patient-focused design aims to provide the best healing environment while projecting confidence to the visitors that the hospital is a place where family members will receive quality care. This will hopefully ease the stress of visiting a hospital.

The clinical services are provided through the following:

- 11 wards that include intensive care, maternity, medical and surgical
- A state of the art imaging and diagnostic center
- A 30 bed emergency department
- 8 operating theaters, 2 'C' section theaters and an in-vitro fertilization theater

The project also includes an underground emergency shelter that can accommodate 100 individuals, five residential buildings that will accommodate 254 hospital staff in self-contained studios, surface car parking for more than 1,200 cars and a helipad for air ambulance emergency transport.

A typical patient care unit is designed in a triangular shape, with patients' rooms along the exterior wall. This means that all patient rooms have an external view and the length of the corridor is cut in half. The design also gives privacy to inpatient care units by segregating interdepartmental and public circulation from inpatient circulation. By keeping major circulation on the perimeter of each zone, potential has been maximized for interior flexibility and departmental growth.

The distinctive Islamic geometric make-up of the design plays an important role in the function of the hospital. Not only does it aid in the overall spatial organization, it also creates trouble-free orientation for the visitors to the facility, with an unambiguous separation between the patient rooms and the diagnostic treatment areas. State-of-the-art building systems are provided to allow full control of the environmental systems.

Some key construction statistics:

Excavation: 100,000 m3
Reinforced concrete: 75,000 m3
Manpower: 1,500 individuals

The New Ahmadi Hospital project falls under the control of KOC Major Projects Group II and is managed in part by Worley Parsons in their role as Project Management Consultants for KOC. The timeline for the development is as follows:

- *Tender period: May to October 2010*
- *Contract award: December 2010*
- *Commenced construction: February 2011*
- *Scheduled completion: End of 2014*

New Ahmadi Hospital under construction.

Local Event

2nd Kuwait Enterprise Risk Management Conference

KOC officials and guests are seen pictured at the event.

The second Kuwait Enterprise Risk Management Conference took place recently at the Hotel Missoni in Salmiya under the sponsorship of Kuwait Petroleum Corporation. Senior officials and employees from KPC and its subsidiaries were in attendance to listen to a variety of presentations that sought to share information on the best methods and processes used by organizations to manage risks and seize opportunities related to the achievement of their objectives.

Nizar Al-Adsani, Deputy Chairman and CEO of Kuwait Petroleum Corporation, delivered the conference's opening remarks and maintained that KPC's decision to sponsor the event was in line with its desire to increase understanding about risk management. He also affirmed that conferences of this kind did much in the way of creating value for Kuwait's oil sector. Al-Adsani noted that Risk Management is a process which KPC and its subsidiaries take seriously, adding that it involves effective planning, organization, command and control in order to reduce risks that may threaten the efficiency and profitability of Kuwait's oil sector.

During the event, a range of international speakers from the United States, Norway, Italy, the United Kingdom and beyond delivered presentations and shared their best practices and experiences in the field of ERM. Bader Al-Shumaimri, Manager of Corporate Risk Management at KPC, also delivered a presentation and discussed KPC's experiences and plans for ERM. Other presenters delivered information on topics such as Integrating Risk Management into Strategic Decision-Making, Creating Value through ERM, Developing a Pragmatic Risk Appetite and Tolerance Framework, Corporate Governance & Risk Management and Modeling Business Risks in the Oil & Gas Industry.

In summary, conference topics touched on the following:

- ERM: Governance Mandates
- Building Effective Risk Monitoring, Metrics and Reporting Processes
- Human Capital Risk Management
- Finding the Right Risk Technology System
- Developing a Pragmatic Risk Appetite and Tolerance Framework
- Integrating Risk Management into Strategic Decision-Making
- Managing Emerging and Interrelated Risks
- How ERM has Created Tangible Value – Success Stories

About ERM:

Enterprise Risk Management provides a framework for risk management, which typically involves identifying particular events or circumstances relevant to the organization's objectives (risks and opportunities), assessing them in terms of likelihood and magnitude of impact, determining a response strategy, and monitoring progress. By identifying and proactively addressing risks and opportunities, business enterprises protect and create value for their stakeholders, including owners, employees, customers, regulators, and society overall.

International Agreements

KOC Signs Contracts Worth Approximately $2 Billion

As part of its efforts to establish the necessary preparations required to turn the 2030 Strategy into reality, KOC has recently signed a number of contracts worth a collective total of close to $2 billion (KD 565 million). The contracts range from consultancy services, technical services and equipment, and the construction of landfill facilities for contaminated soil. A brief summary of each contract can be found below.

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1. Baker Hughes Contract

The Company recently signed a $262 million contract with American company Baker Hughes to supply, install, operate and maintain Electrical Submersible Pumps (ESP Systems) throughout KOC's sites of operation. The five year contract was signed on behalf of KOC by CEO Hashem S. Hashem and on behalf of Baker Hughes by Imad Al-Ajmi, the company's manager in Kuwait.

In a statement he delivered during the occasion, CEO Hashem said that Baker Hughes specializes in oil field services and that it has long been a major partner in the domain of developing oil production and ESP services. He upheld the contract as "very important" because Electrical Submersible Pumps are among the basic tools that KOC depends on for the sustainable production of oil wells. "Furthermore," he said, "Baker Hughes has a program to train and develop young Kuwaiti engineers who are currently being trained throughout various installations."

Meanwhile, Al-Ajmi expressed satisfaction over the trust bestowed upon him by KOC and the signing of such an important contract. He emphasized that the partnership between both parties dates back several years and he upheld the contract as part of his company's commitment to provide the best services in the domain of Electrical Submersible Pumps.

2. Saudi Al-Khorayef Group Contract

This contract demonstrates the importance of ESPs for KOC, which recently signed a $275 million contract with Al-Khorayef Group, a Saudi Arabian company which specializes in the supply, installation, operation and maintenance of Electrical Submersible Pumping (ESP) systems. The systems are to be commissioned throughout Kuwait Oil Company operation zones.

CEO Hashem S. Hashem signed on behalf of KOC while Al-Khorayef Group Chairman Saad Al-Khorayef signed on behalf of his company. The contract dictates a five year operational period with a one year optional extension.

In a statement he delivered during the ceremony, CEO Hashem reiterated that the signing of the contract with Al-Khorayef Group, which KOC has worked with for more than 14 years, is intended to cover 450 oil wells in order to increase their output and maintain their levels of production.

Al-Khorayef then expressed great pride over the trust bestowed by KOC upon his company as a successful bidder for the contract. He added that his company specializes in the manufacture of the type of pumps KOC requires and that his company is active in several countries around the world.

3. Combined Group Contracting

As part of its interest in protecting the environment, KOC recently signed a contract with Combined Group Contracting Co. for the Construction of Landfill Facilities for Hydrocarbon Contaminated Soils in North Kuwait (Group B). The contract was signed by CEO Hashem S. Hashem on behalf of KOC while Combined Group Contracting CEO Sulaiman Abdul Rahman Al-Marouf signed on behalf of his company.

Representatives and top officials from KOC, Kuwait National Focal Point (KNFP), Kuwait Institute of Scientific Research (KISR), Soil Remediation Group, and AMEC were in attendance for this significant ceremony.

The Kuwait Environmental Remediation Program (KERP) is a large-scale Environmental Remediation and Restoration Project with high visibility and importance on both a local and international level. It is under the direction of the KOC Soil Remediation Group.

4. Technip Contract

KOC recently signed a contract with Technip worth approximately KD 117 million which will provide consultancy services in project management, planning, control and the training of young Kuwaiti engineers.

The contract was signed by Acting CEO Saad Al-Azmi on behalf of KOC while Senior Vice President Riccardo Moizo of Technip PMC signed on his Company's behalf in the presence of the French Ambassador to the State of Kuwait, Christian Nakhle, and senior officials from both sides.

Al-Azmi delivered a speech on the occasion in which he welcomed the French Ambassador and the accompanying delegation. He upheld that KOC will spare no effort in offering all necessary support to ensure the execution of the contract as planned. He also indicated that the contract heralds in a new phase of cooperation and partnership between the two sides for the coming five years.

For his part, the French Ambassador welcomed the signing of the contract and affirmed the support of his government for it, wishing all the best for the new partnership.

5. AMEC Contract

KOC recently signed a contract with AMEC for Consultancy Services in Project Management and Related Activities that is worth approximately KD 118 million.

The contract was signed by CEO Hashem S. Hashem on behalf of the Company, while Kuwait Operations Director Alan Armstrong signed on behalf of AMEC. The signing ceremony was also attended by the British Ambassador to the State of Kuwait, Frank Baker, along with senior officials from both sides.

In a statement he made on the occasion, Hashem affirmed the importance of the contract in achieving KOC's strategy, which is aimed at increasing production capacity. He explained that the Company has established a successful partnership with AMEC over the past ten years, during which the latter played a pivotal role in executing projects in a desired manner. He also commended the company's role in training Kuwait's young engineers.

For his part, Armstrong expressed appreciation for the continued partnership with KOC, while describing the contract as very important. He also affirmed his company's eagerness to accomplish the capital projects within the specified timeframe.

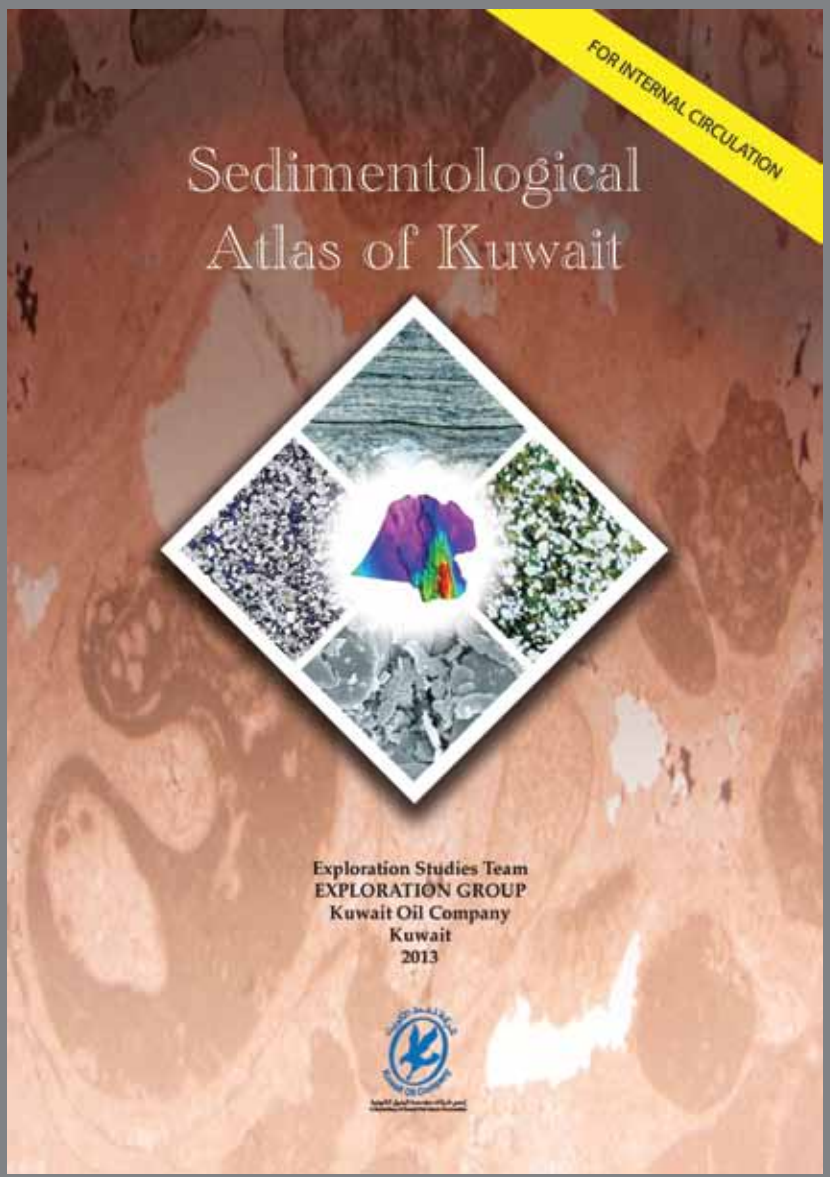
6. Worley Parsons Contract

The KOC contract with Worley Parsons is worth approximately KD 114 million and is meant for consultancy services and related activities. The contract was signed on behalf of KOC by CEO Hashem S. Hashem while Worley Parsons' Kuwait Project Manager Martin Davies signed on his company's behalf. The signing ceremony was attended by a number of senior officials from both sides.

Following the contract signing, the KOC CEO delivered a speech in which he highlighted the constructive relationship binding the two sides. He also noted that Worley Parsons has successfully contributed to the management of KOC's projects, particularly the Heavy Oil project in North Kuwait. For his part, Davies expressed appreciation for the opportunity given to his company and affirmed commitment to execute the contract in a desired manner.

Internal Report

Exploration Group Publishes "Sedimentological Atlas of Kuwait"



As part of its efforts to create an important resource that shares information about the sedimentological aspects of Kuwait's geology, the Exploration Group recently prepared an atlas that will serve as an extremely valuable resource for KOC geoscientists. The idea for the atlas itself arose out of the realization that there was not a comprehensive resource which covered the entirety of Kuwait's geology for Company employees who needed such a tool. Generally, various teams throughout KOC focus specifically on areas and formations they work on. A result of this tendency is that they then do not have a clear understanding of other geological horizons. The Exploration Group hopes that the availability of the Sedimentological Atlas of Kuwait will help all KOC geoscientists better understand Kuwait's geology in a better way by reducing the time needed to search for information about Kuwait's various formations.

How the Idea Came About

Normally after monthly meetings at the Exploration Group, team members are encouraged to come up with the new ideas that create value for their Team, Group, and Company. One idea which was proposed included an atlas which would serve as a tool to overcome the difficulty faced by UD's as well as new employees in understanding Kuwait's geology. Initially, a draft atlas was prepared which demonstrated an outline and reflected the potential that such an atlas could have. KOC Management showed interest in the project which lead to the project being green lighted and commissioned.

About the Atlas

The atlas focuses on sedimentological aspects of the rocks of Kuwait and covers the entire rock record from the Paleozoic to Cenozoic (Cambrian to Recent). It includes descriptions of the characteristics of rocks and is represented by core photographs as well as a multitude of informative charts and diagrams. The book is divided into five major chapters with subdivisions within those chapters. Chapter 1 is an introduction which covers a generalized stratigraphy of Kuwait, Kuwait's oil fields, as well as Earth's geological history. The history section provides an overview of geological happenings on earth since its formation (around 4.6 billion years ago). Chapter 2, 3 and 4 cover the Paleozoic, Mesozoic and Cenozoic eras respectively. These chapters include an overview of events during that period and have been subdivided based on Geological Ages like Triassic, Jurassic, Cretaceous and so on and have details which define the various types of rock formations. Chapter 5 is a summary of the atlas. The organization of chapters is devised in a way that allows the reader to easily find the content he or she requires. An attachment to the atlas includes something titled "A Brief Description on Sedimentological Characters of the Rocks of Kuwait" and is meant for readers who do not want to go into much detail but still want to understand Kuwait's geology.

Compiling the Atlas

As the work required for the compilation of the atlas was extensive, it was divided into four phases. Work began in 2010-11 and a limited number of copies from the first phase which covered the Triassic and Jurassic periods were distributed to various teams so that feedback could be received. A positive response from the first phase and a concerted effort to complete the atlas meant that those in charge of the atlas decided to reduce the four phases to three, which ended with the atlas being completed in three years.

Technical data related to core and cuttings was required for the completion of the atlas. In addition, a number of reports as well as data from various Teams and Groups were required. Outside information was also used in some instances, particularly for the sections on Earth's geological history and information related to Geological Eras and Periods.

Many other teams aside from the Exploration Group were instrumental in making the atlas a reality. Other teams were quick to lend their support, such as Field Development Team Leaders and their team members, who were highly supportive in providing a wide range of information. Riyasat Husain, Arun Dey and Sunil Singh reviewed the manuscript and provided useful comments despite their busy schedules. A few names from outside the Exploration Group which deserve to be mentioned are Salem Al-Sabea, Team Leader, FD (East Kuwait), Adnan Aiesh Al-Shamali (New Field Development Team, WK), Taher Mohammed Gezeeri (Minagish Field Development Team, WK), Laila Hayat (Greater

The KOC CEO pictured with employees who worked on the atlas.

Exploration Studies TL Abdul Aziz Al-Fares discusses the atlas.

Burgan Studies Team, S & EK), Shaikh Abdul Azim and Abdel Aziz Sabry (Growth Studies Team, NK) and N. S. Rao (Gas Field Development Study Team). The Information Team was also very helpful and cooperative in the designing and printing of the atlas.

Recipients of the atlas included the KOC CEO, Deputy CEOs and Managers involved in geoscience activity along with all Geologists, Geophysicists and Petrophysicists. In addition, it has been made available to the Library and anyone who feels that it can be helpful can get a copy on request. As the book contains confidential data, it is restricted to Company employees only.

Completion of the Atlas

After the completion of the atlas, CEO Hashem S. Hashem received Exploration Group Manager Ahmed Al-Eidan, who presented him with the Kuwait Geology Atlas during a Leadership Committee meeting. Hashem expressed appreciation for the Exploration Studies Team and maintained that they exerted great effort in compiling the book, which he described as "an important reference" for the Company and employees in the oil sector. The CEO also said that the work is worthy of emulation by other KOC assets.

Al-Eidan explained that the book covers all the geological aspects of Kuwait, noting that plans are in the pipeline to have the atlas translated into Arabic and distributed to bodies such as the Ministry of Education and Kuwait University. He also expressed appreciation to the Senior Management for their support.

Meanwhile, Exploration Studies Team Leader Abdul Aziz Al-Fares affirmed that the initiative met the demands of employees in this domain, especially the geologists, in order to deepen their knowledge of Kuwait's reservoirs.

It should be noted that the book was compiled by Dabeer Khan, Saifullah Tanoli, Mohammad Al-Ajmi and Nada Ammar under the supervision of their Team Leader.

Future Plans

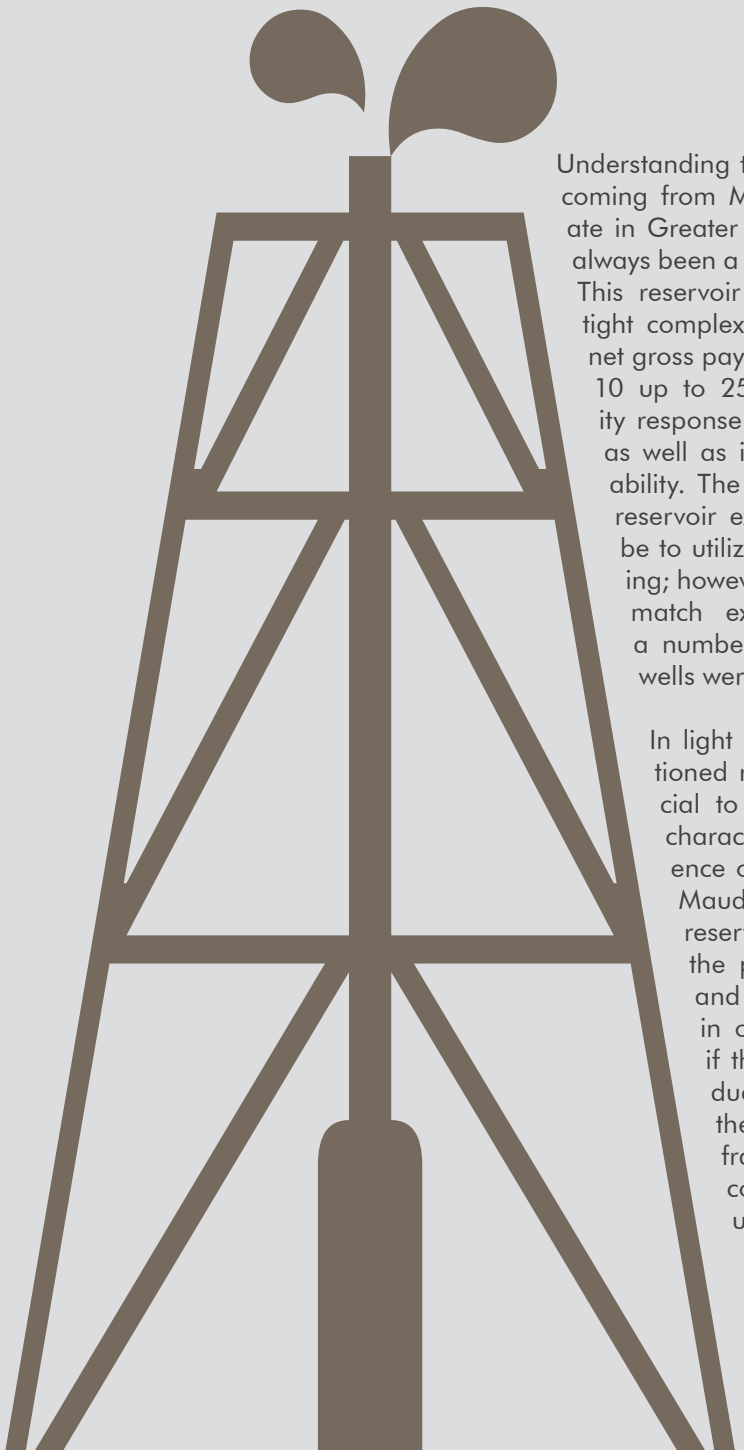
The Exploration Group hopes to publish a simplified version of the atlas which can be used and understood by individuals with no scientific or geological backgrounds but who have an interest in better understanding Kuwait's geology. Students throughout Kuwait's schools may be recipients of this simplified version as they can benefit greatly from the information it contains.

Because the atlas was produced based on the existing data available to the Exploration Group at the time, it goes without saying that future editions of the atlas will include updated information, facts and figures on new wells that are drilled and more information about reservoirs as it becomes available.

Technical Report

Mauddud Fracture Analysis and Successful Stimulation of Horizontal CP Wells

Submitted by the Fields Development Team and the Well Surveillance Group



Understanding the flow behavior coming from Mauddud carbonate in Greater Burgan field has always been a matter of debate. This reservoir is composed of tight complex carbonates with net gross pay that ranges from 10 up to 25 feet. Its porosity response is generally low, as well as its matrix permeability. The best strategy for reservoir exploitation would be to utilize horizontal drilling; however, results did not match expectations after a number of unsuccessful wells were drilled.

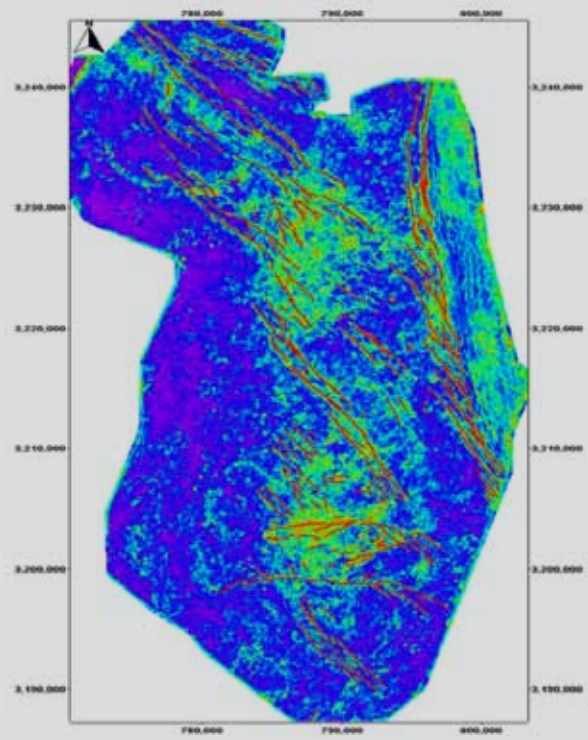
In light of the aforementioned reasons, it is crucial to understand and characterize the presence of fractures in the Mauddud carbonate reservoir as well as the presence of vugs and leached features in order to establish if the observed production is related to the matrix or to the fracture network contribution. The understanding of the relationship between matrix characteristics, fracture distribution, and well production will allow planning a better developing strategy for the sweet spots.

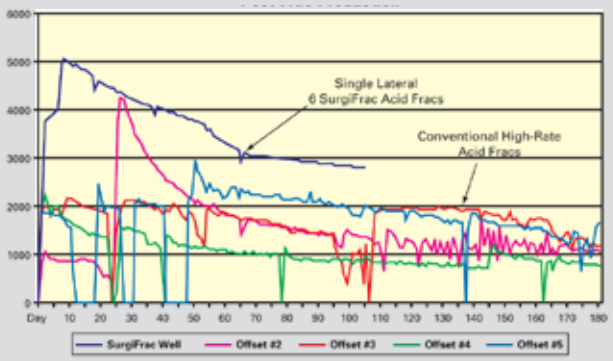
The first objective was to conduct an integrated fracture characterization of the Mauddud formation using static data (Borehole Image logs-BHI, cores and wireline logs) geophysics, and dynamic data (production data, flowmeter, welltests) to determine the types of fractures and their occurrence in order to predict their flowing behavior. This information was integrated in order to interpret if the current Mauddud production can be due to matrix contribution or due to the impact of fractures. Based on this work, opportunities were evaluated once more to revive many non-producing wells which showed sharp decline due to tight rock matrix, leading production engineers and geologists to explore new technologies and methods to unlock the potential in this tough oil reservoir.

There are many ways to stimulate an uncased open hole horizontal well using acid. The simplest but

most ineffective way is to pump acid into the well (i.e., bullhead) without placement control. While often used, such approaches will create massive enlargements at the entry point or high injectivity area, causing ineffective treatments and re-entry issues. Wellbore collapse often follows. The use of Coiled Tubing (CT) as a "pin point" delivery method is therefore preferred. Using CT, we can disperse the acid either uniformly or intermittently along the lateral as desired. We also can perform acid washing; which is another common process that can improve stimulation without much additional expense. Using a jetting tool with many jets, acid can be sprayed onto the wellbore wall, and the active agitation caused by this acid-wash process increases the chemical reactivity of the acid at the desired locations.

While using CT, an even better approach is to use a hydrajet assisted acid fracturing (HJAAF) method.



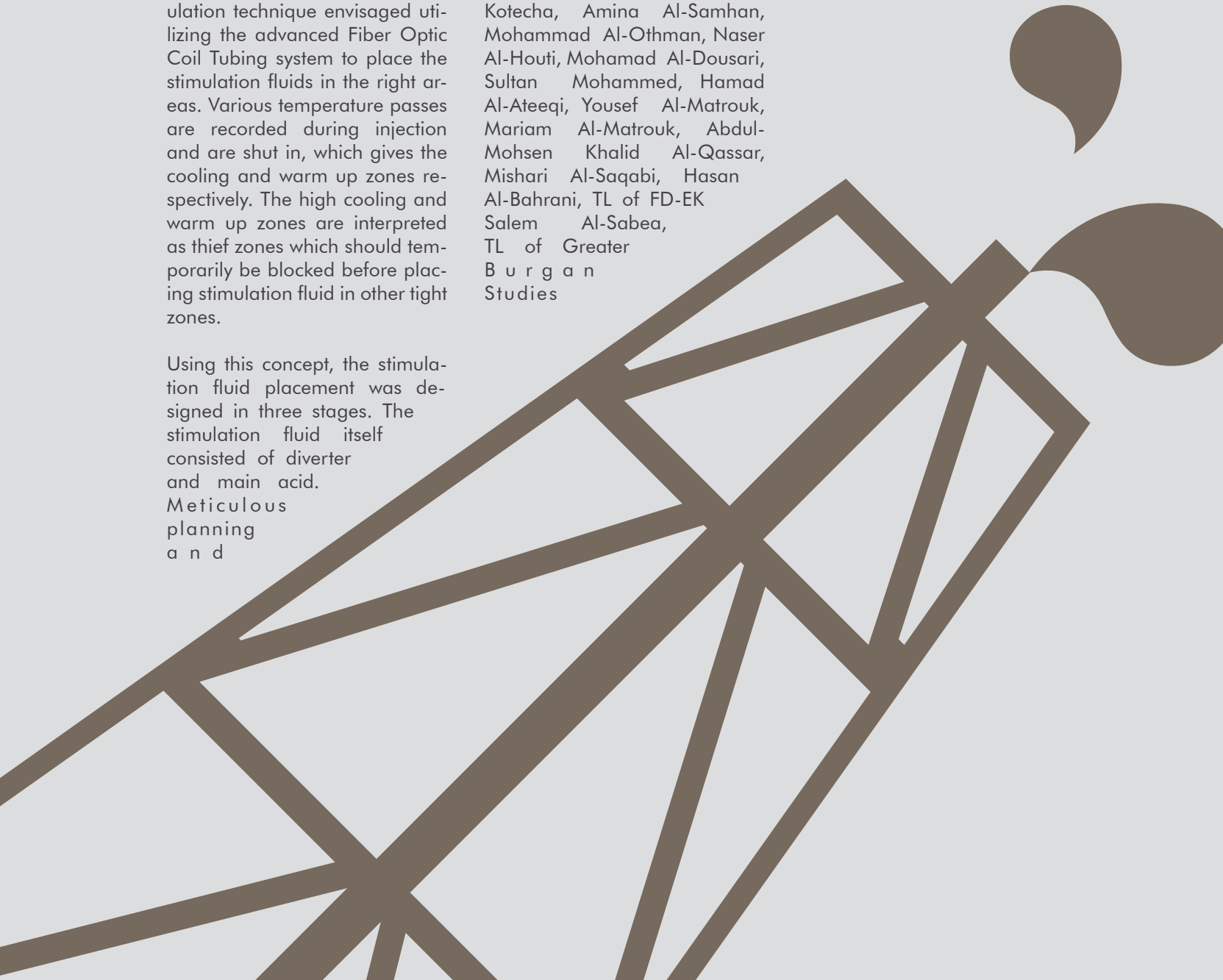


Using focused jetting of acid at much higher pressures, the process initiates microfractures in the wellbore walls. When etched with acid, this approach effectively bypasses near the wellbore damage much deeper than common washes, thus creating much better results. Further modification of the process by exerting high annular pressures offers the capability of delivering medium to large fractures.

Recently, this new approach was used to stimulate around a 1500' open hole wellbore in a horizontal well bore. This well had not produced any oil since its drilling in 1994. The new stimulation technique envisaged utilizing the advanced Fiber Optic Coil Tubing system to place the stimulation fluids in the right areas. Various temperature passes are recorded during injection and are shut in, which gives the cooling and warm up zones respectively. The high cooling and warm up zones are interpreted as thief zones which should temporarily be blocked before placing stimulation fluid in other tight zones.

Using this concept, the stimulation fluid placement was designed in three stages. The stimulation fluid itself consisted of diverter and main acid. Meticulous planning and precise execution resulted in excellent results. The well which never produced since drilled started producing 1000 barrels of oil per day.

The successful production of the well and consequent completion of this paper could not have been accomplished without the collaboration that existed between Fields Development South-East Kuwait and the Well Surveillance Technical Team. The following individuals were instrumental in this cause: Naz Gazi, Hamdah Al-Enezi, Omran Al-Zankawi, Reham Al-Houti, Eman Abdul-Razzaq, Fatma Sanaseri, Naween Turky, Imad Attar, Rohit Kotecha, Amina Al-Samhan, Mohammad Al-Othman, Naser Al-Houti, Mohamad Al-Dousari, Sultan Mohammed, Hamad Al-Ateeqi, Yousef Al-Matrouk, Mariam Al-Matrouk, Abdul-Mohsen Khalid Al-Qassar, Mishari Al-Saqabi, Hasan Al-Bahrani, TL of FD-EK Salem Al-Sabea, TL of Greater Burgan Studies Farida Ali, TL of Well Surveillance Team I Falah Al-Omair and Manager FD-SEK Jamal Al-Humoud.



Strategic Report

Nine Approaches to Counter the Emergence of Unconventional Oil

By Abdulaziz Al-Attar,
Head of KPC's Houston Office

The global market for conventional oil faces oversupply. Unconventional output – tight oil, shale, sand oil, biofuels and ethanol – is rapidly expanding with other countries set to join the US as key producers. The reshaping of global oil trade flows could hit conventional producers. How can they adapt?

As long as prices for crude oil remain high, record levels of production in the United States as well as new discoveries of unconventional oil around the globe can be expected to continue. Unconventional oil supply is thus expected to remain responsive to crude oil prices. The average cost of Gulf conventional oil production is around $3-15/B, while the cost of unconventional oil production ranges from $50-80/B. Consequently, unconventional oil supply can be expected to fall if oil prices drop below $80/B.

The increase in world oil supply reflects the expansion of non-OPEC oil production, primarily unconventional oil from the US (tight oil) and Canada (oil sands) as well as conventional oil production in Kazakhstan and Brazil. In addition, OPEC member countries plan to increase crude oil exports in order to maintain revenues. In 2012, total world oil supply exceeded demand by approximately 1mn b/d compared with 200,000 b/d in 2011. Based on currently available data, the surplus in crude oil supply will continue to grow, and the disparity between oil supply and demand will continue to widen, exceeding approximately 1.5mn b/d in 2013 and 2014.

Accordingly, the oil market has become a buyer's market; customers have an advantage over sellers in price negotiations. In response to customers' demands, oil sellers might reduce crude oil prices further in order to maintain or enlarge their market shares, thus causing cyclical price reductions below the breakeven cost of unconventional oil production. This would set alarm bells ringing regarding the world's oil supply as unconventional oil production becomes uneconomic. In this case, the oil market will be in shortage of supply and crude oil prices will rapidly increase.

The growth of unconventional oil production means that the market share of producers of conventional oil and that of OPEC members will decline. The central question is therefore how oil producers can counter the emergence of unconventional oil without causing oil market failure. The answer to this complex question is a set of long-term cooperative measures aimed at alleviating the challenges associated with retaining or expanding market share and preserving oil revenue for oil-producing countries.

The rise of unconventional oil has reshaped trade flows, necessitating greater collaboration between oil producers and consumers in order to sustain both conventional and unconventional oil production, maintain oil demand growth and balance oil trade between regions.

Nine Ways of Adapting

This article presents a manifesto for oil producing companies and nations to adapt to increasing unconventional supplies. By means of studying the oil market it attempts to identify approaches that create a win-win scenario for producers of both conventional and unconventional oil. The methodology used is based on both normative analysis and value judgment to determine what producers and/or exporters of conventional oil should do in order to reform their economic policies and marketing plans in the face of a saturated and highly competitive oil market.

1. Cooperation and Competition

Since the beginning of the twentieth century, oil demand has fostered cooperation between oil producing and consuming countries, and regional and international economic integration. However the oil industry is currently undergoing dynamic evolution. Historically there have been neither losers nor winners among exporters and importers. But redirected trade flows have changed the game and led to greater competition. In order to adapt to these changes, companies that produce conventional oil could expand their relationships by either cooperating with other oil firms and/or by forming economic partnerships with oil-consuming countries. In the oil industry, cooperation both in the upstream and downstream sectors consists of joint ventures (JVs) and strategic economic alliances. In a very competitive oil market, upstream and downstream JVs between national and international oil companies mitigate market risks and uncertainty and enable technology transfer and the sharing of know-how. Unconventional and conventional oil are complementary to each other. Cooperation between unconventional and conventional oil producers in the upstream and downstream can therefore be expected to expand in the coming years through various types of contractual arrangements.

2. Working Globally

By definition, two key types of companies exist in the petroleum industry, international and global. International companies merely export their goods and/or services abroad, whereas global companies not only sell their goods and/or services to numerous other countries but also invest in these countries' markets. Global companies aim to enlarge business opportunities that increase regional and global economic integration and collaboration by sharing knowledge and fostering relationships between nations. They also aim to encourage cooperation and economic interdependence, thus alleviating potential economic challenges and geopolitical tensions.

In addition, global companies offer several benefits to the oil sector. First, they encourage international economic integration; second, they share the responsibility for ensuring that oil supply and demand are secure and sustainable; and third, they support foreign oil entities (including upstream, downstream and service companies) in working towards their common goals.

From a strategic standpoint, in a competitive business environment such as the oil market, companies can shift from an international to a global focus by increasing their investment abroad in order to gain profitable returns and income and/or to expand their market shares. Accordingly, many oil companies focus their operations abroad on either the upstream or downstream sectors of major oil-consuming countries, regardless of whether they are in declining, mature, growing or new markets.

Clearly, both the world oil industry and global economic structures have changed, requiring a new form of collaboration which strengthens multilateral and bilateral relationships among regions and countries. This in turn requires increasing collaboration between national oil companies, international oil companies and service companies.

3. Create a New African Market

The world's oil markets are continuously evolving. With the current changes in the market and the boom in unconventional oil, the oil market is now divided into four geographic segments: Europe (declining), United States (mature), Asia (growing) and Africa (new market).

A declining market exists in areas where oil demand is falling, in Europe, for example, due to the emergence of natural gas as a substitute for oil. At this juncture, oil demand is vulnerable to the price of substitutes, such as natural gas. In order for oil exporters to sustain their market shares, the responsiveness of the demand for natural gas to changes in crude oil prices should be determined by calculating the cross-price elasticity of natural gas demand.

A mature market exists in areas such as the US, where oil demand is stagnant. In addition, the market is highly challenging due to the rise of domestic unconventional oil in shale formations such as Bakken, Eagle Ford and Utica. In this market, oil prices are volatile and depend on other domestic prices as opposed to imported crude prices. In order for oil exporters to sustain their market share, the price level that leads domestic consumers to give up domestic crude in favor of imported crude should be determined by calculating the price elasticity of the supply of unconventional oil.

A growing market exists in areas such as Asia, where oil demand continues to grow due to a combination of shifts in industrialization, factories and capital investment from West to East. A surplus in world oil supply and the expansion of shale oil in the US have led oil producers in the Middle East and West Africa to target the Asian market as an outlet for their crude. As a result, oil prices in Asia are sensitive and respond rapidly to official selling price variations. In order to sustain or expand the market share of Middle Eastern and African exports to Asia, the price level that leads buyers to give up less lucrative crude in favor of more attractive crude should be determined by calculating the price elasticity of demand.

Due to the increase in unconventional oil production, world oil supply is expected to continue to exceed demand. There is thus an incontrovertible need to create a new market that will increase the number of customers and sustain the flow of crude oil and petroleum products. Creating these markets requires changing consumers' behavior through capital investment. Increased capital will stimulate growth in the demand for goods and services, proving the adage that "good companies will meet needs; great companies will create markets."

Looking to the future, the most promising area for new markets is Africa. Despite slow development and high investment risk, the African continent represents an attractive opportunity for investors because minimal capital investment is required to generate potentially high returns. New capital and technology would result in rapid economic growth and create a new market that would merit political and economic attention. With this context in mind, the Kuwait Ministry of Foreign Affairs organized an Arab/Africa Summit in November 2013 in Kuwait City to discuss economic opportunities and cooperation in Africa. This summit's main objective was to attract foreign capital investment and to offer Africa an opportunity to sustain its economic growth, improve its standards of living and increase oil demand in the long run, as Asian countries did in the 1980s.

Establishing liaison offices in a new market such as Africa enables investors to identify business opportunities, build relationships with local companies and increase the number of customers. The office should include commercial attaches and economic advisors who gather market data and information about legal amendments and government mandates in host countries.

4. Determining Elasticity

With world oil supply exceeding demand by 1.5mn b/d due to rising production of unconventional oil, the oil market has become a buyer's market. In order to address the emergence of unconventional oil, producers of conventional oil should evaluate the reaction of customers and/or competitors to oil price changes by measuring oil price elasticity in various market segments. Periodic measurement of elasticity provides an equilibrium crude oil price for both consumers and producers and shows how the market responds to price changes. Oil producers can also identify how much customers are willing to pay for crude by quantifying the following four elasticity measures:

- Cross-price elasticity of demand measures the responsiveness of natural gas demand to changes in crude

oil prices in declining markets such as Europe. Once oil prices top $100/B, natural gas appears to become a substitute for crude.

• Elasticity of oil supply measures the responsiveness of domestic unconventional oil supply to changes in crude oil prices in mature markets such as the US. It appears that conventional oil has less supply elasticity than unconventional oil; thus if oil prices drop below $80/B, the supply of domestic unconventional oil will decline and crude imports will increase.

• Elasticity of oil demand measures how oil demand responds to changes in the oil price in growing, competitive markets such as Asia. Current oil price data suggest that if oil prices exceed $120/B for two consecutive months, oil demand growth will decline. Conversely, if oil prices drop below $90/B, oil demand growth will increase.

• Income elasticity of oil demand measures the responsiveness of oil demand to changes in income in new markets such as Africa. The standard of living and gross domestic product are key measures of macroeconomic performance and ultimately oil demand growth.

5. Marketing, Not Selling

Generally, substantial differences exist between marketing and selling. Marketing views the entire business process as consisting of a tightly integrated effort to discover, create and satisfy customer needs, whereas selling concerns itself with employing techniques to convince prospective customers to exchange their cash for a product while ignoring other aspects of the transaction.

Marketing rather than selling is therefore the necessary response to counter the emergence of unconventional oil. Countries that produce conventional oil should focus not only on production increases and product development but also on changes in the market and understanding customers' future requirements in order to identify their changing needs and desires.

A major part of the marketing plan should be to continue the global energy dialogue with rival oil firms and energy consumers in order to emphasize that producers of conventional oil are reliable suppliers of affordable and sustainable energy. In other words, public relations and energy diplomacy should be emphasized in an effort to secure future supply and demand

The world oil industry is adopting new approaches to marketing aimed at strengthening the relationships between buyers and sellers. For instance, the stated aims of the Kuwait Petroleum Corporation (KPC) are:

• To make KPC a leading marketer of high-quality products and services to the international market.

• To become a reliable, secure, and efficient supplier that is fully responsive to global customer needs.

• To respond proactively to oil market dynamics, opportunities and challenges.

6. Market Research

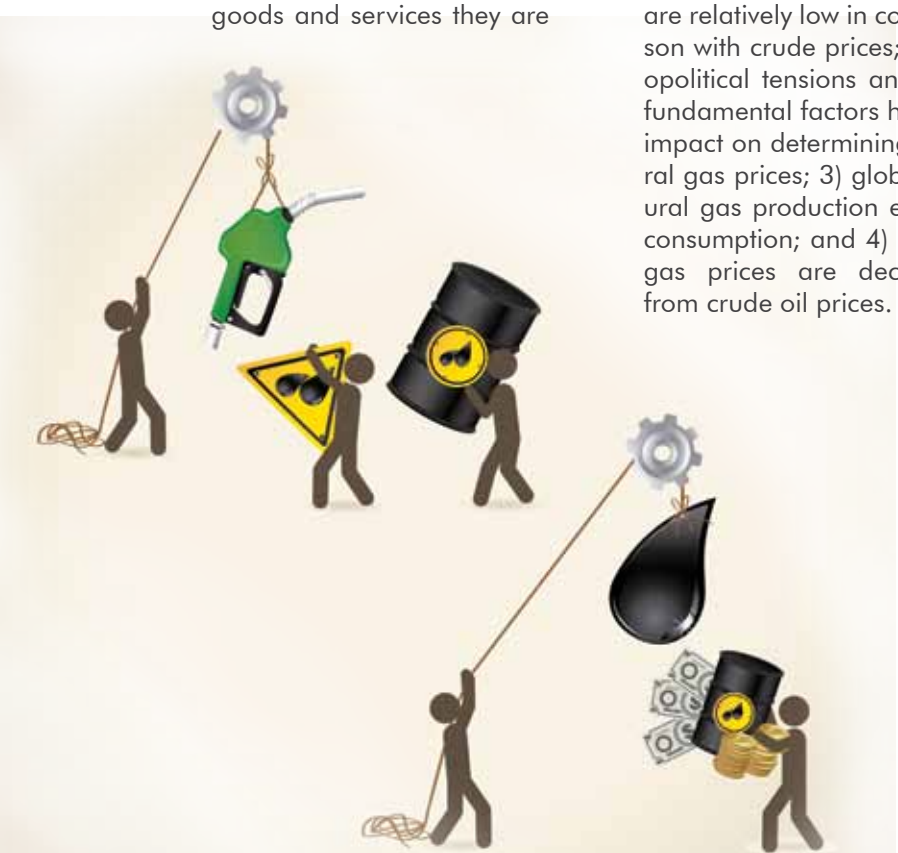
Research provides the primary source of information used in decision-making. Producers of conventional oil need to expand the scope of their market research in order to come to terms with current challenges and opportunities in the oil market. They should participate in research and development (R&D), focus on the economics of alternative energy sources, and seek to establish research agreements with various countries, think tanks and academic institutions. Other responsibilities of R&D centers include studying the cost of producing energy from renewables and employing renewable energy domestically. The purpose of such involvement

is to determine the impact of other energy sources on conventional oil in both the long and short run.

As an example, the MIT Energy Initiative was established in 2006 to help transform the global energy system to meet the needs of the future and to build a bridge to that future by improving today's energy systems. In addition, the US State Department has signed agreements with several countries to cooperate in research in the fields of natural resource management and energy.

7. Comparative Advantage

Comparative advantage, as conceived by David Ricardo, is the concept by which the benefits of international trade are considered in terms of the opportunity-cost of producing the same commodities domestically. The theory is generally believed to favor international trade because it postulates that countries should export the goods and services they are best at producing and import goods and services in which they are less strong. According to comparative advantage theory, everyone should be better off.



Applying Ricardo's theory to international trade between the producers of unconventional and conventional hydrocarbons involves trade-offs between natural gas and oil. The production of unconventional hydrocarbons primarily yields natural gas, as well as high-cost crude oil. Producers of conventional oil mainly produce crude oil at a low cost. Trading oil for natural gas helps to ensure sustainable exports and imports for all the parties involved.

In this scenario, the reliance of conventional oil producers on natural gas imports to meet the growing domestic energy demands of power stations would increase crude oil and product exports to the world marketplace. Typical reasons for conventional oil producers to import natural gas are: 1) natural gas prices are relatively low in comparison with crude prices; 2) geopolitical tensions and non-fundamental factors have no impact on determining natural gas prices; 3) global natural gas production exceeds consumption; and 4) natural gas prices are decoupled from crude oil prices.

8. Economic Diversification

The growth of unconventional oil will likely mean shrinking market share and revenue for conventional oil exports. To overcome these challenges and protect revenue flows in the long run, countries that produce conventional oil can diversify economically in order to attract foreign direct investment (FDI). To do so, host countries must provide an appropriate legal framework, and the legislative branch should accordingly take steps to ensure sustainable economic development, political stability and an adequate rate of return on investment.

Economic diversification through the expansion of a country's manufacturing, service and agriculture sectors will also broaden its revenue base. In order to diversify national revenue Kuwait is establishing economic programs designed to transform the nation into a financial center that is attractive for both business and FDI. This financial center is intended to strengthen the multilateral and bilateral economic and financial relationships that exist between various regions and countries and the Kuwaiti economy. Kuwait is also enhancing its economic diversification by promoting other sources of energy, such as solar, with the objective of meeting the energy needs of the present generation without compromising future generations' ability to sustain their livelihoods.

9. Improving the Supply Chain

In the oil industry, the supply chain consists of all of the parties involved in meeting demand and includes transportation, storage facilities, refineries, retailers and customers as well as services such as product development, marketing, operations, distribution and finance. Improving the supply chain mitigates financial risks, provides access to backstop technologies and minimizes costs.

The term 'economies of scale' refers to the cost advantages of expansion; in other words, the concept of "bigger is better." In the oil sector, economies of scale apply to facilities, refineries and logistics but not to exploration and production. Economies of scope provide a competitive advantage to refineries that produce several types of products rather than just one – for example, ethanol and biofuels.

With the rise of unconventional oil and a crude oil supply surplus, the demand for and marketing of crude oil will become more complicated, with refineries and petroleum products being key elements of the oil supply chain. Economies of scale dictate that refineries with high crude oil throughput are more economical than smaller refineries. As refinery product quality shifts to meet greater demand for light, low-sulfur and environmentally friendly products, deep conversion refineries and fully integrated petrochemical complexes are the most economically sound organizational structures.

Producers of conventional oil should therefore expand their refinery throughputs and build petrochemical complexes either domestically or abroad. Internationally, the ultimate objective is to secure the market for conventional crude through mergers and acquisitions or JVs. Oil logistics (ie pipelines, tankers and railways) are another vital part of the supply chain because they secure refineries' supplies and demand for crude oil.

The advantages of international downstream JVs are technology transfer, cost minimization and market risk mitigation. Producers of conventional oil can also export their crude to refineries abroad, locking in long-term demand for crude oil and ensuring an adequate supply of crude in the host country.

A number of countries that produce conventional oil have adopted policies which aim to secure outlets for their crude in a very competitive future oil market. For example, KPC has several downstream JVs in Europe, and plans to expand its market in Asia by participating in building grassroots refineries in China and Vietnam and potentially in other countries, such as India and Indonesia.

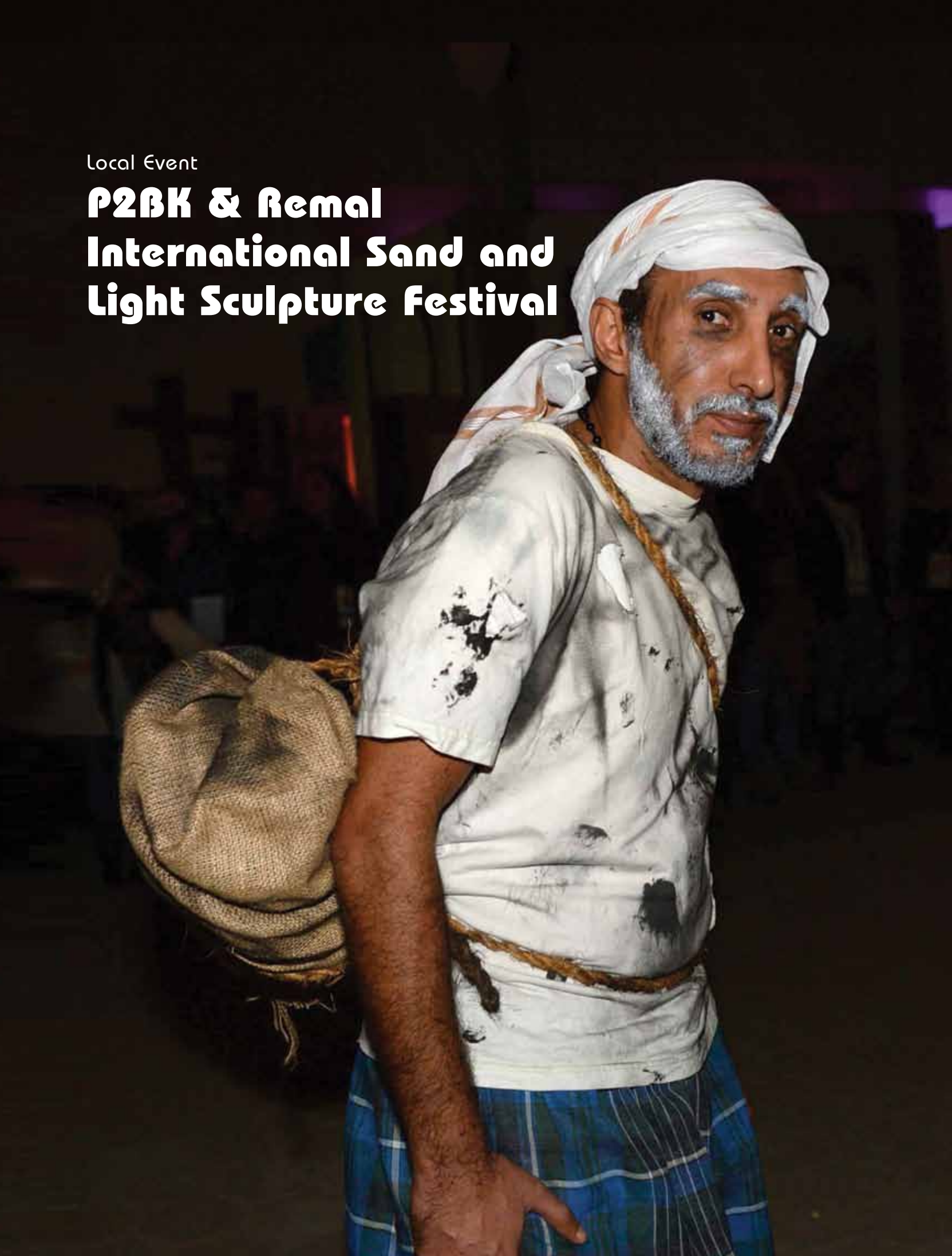
Conclusion

These nine approaches can help producers of conventional oil counter the rise of unconventional competition. Producers of both share a responsibility to ensure that both supply and demand are more secure, less price-volatile and more conducive to sustainable energy growth. Increased research collaboration would allow the world to identify reliable, sustainable and affordable energy for many decades to come, whilst investment in new markets will stimulate demand.

Finally, to counter the emergence of unconventional oil, producers of conventional oil should cooperate globally in working towards common goals. Downstream cooperation, including the expansion of the supply chain via JVs and strategic alliances, will maintain oil flows for producers of conventional and unconventional oil alike.

Local Event

P2BK & Remal International Sand and Light Sculpture Festival



The Proud to Be Kuwaiti (P2BK) exposition took place recently at the Mishref International Fairgrounds. Held under the patronage of HH the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah, the event itself was opened by Minister of Information Sheikh Salman Al-Humoud Al-Sabah. Also in attendance was the Minister for Cabinet Affairs Sheikh Mohammad Al-Abdullah Al-Sabah and a host of other government officials and public figures. A folklore band in traditional garb performed during the opening ceremony.

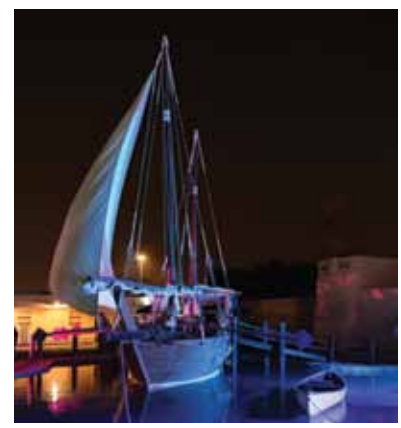
The annual P2BK event has become an increasingly important event to showcase local talent and entrepreneurs. Because of the heavy foot traffic and media exposure the event receives, many individuals and local business plan well in advance to secure a place during the exhibition so that they can get publicity for their businesses. This year, a gigantic sand sculpture park and heritage village were constructed alongside the main P2BK grounds. Thousands of exhibitors participated in the fair this year, with more than 1,000 volunteers on hand. Event organizers said they expected more than half a million visitors to attend the exposition during its run.

According to event organizers, the Remal International Sand and Light Sculpture Festival, one of the main attractions at the expo, was the world's largest sand sculpture park ever created. About 80 sand artists came to Kuwait to work together to recreate scenes from "1,001 Nights."

The heritage village was divided into 11 sections, with names reflecting Kuwait's heritage such as Darwaza (Gate), Souq (Market) and Hosh (Courtyard). The main food area was named "Gahwat Bu Nashi" after the first coffeehouse in Kuwait which dates back to the late 1700s.

Dhari Al-Wazzan is credited with coming up with the idea for P2BK, which is a nonprofit organization that was established by a group of young Kuwaitis who found inspiration in their love and loyalty to their country.

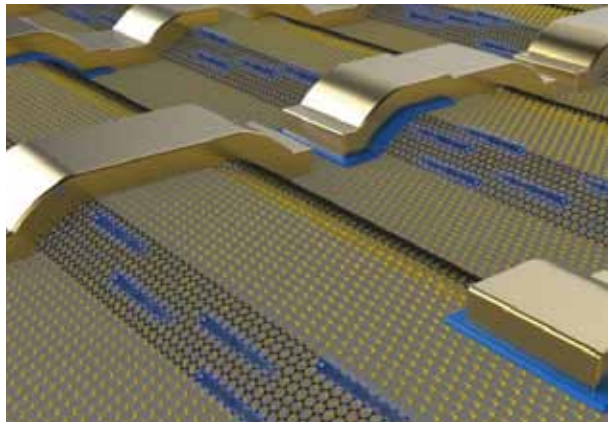
While P2BK has grown over the years in scope and size, organizers have maintained that the initial idea for the forum has remained unchanged, which is namely to support small and medium-sized sized businesses in Kuwait. At the event, visitors were able to browse through and learn more about goods ranging from food and beverage, clothes, perfumes, accessories, books, toys, home accessories and more. The event also serves as a location where local talent can be highlighted.



About the Remal International Sand and Light Sculpture Festival

Approximately 80 sculptors from more than 25 countries were in Kuwait to lend their expertise to the Remal International Sand and Light Sculpture Festival. The international team spent months building the world's largest sand sculpture park for P2BK 2014, where sculptures were modeled around 40 different scenes from "1,001 Nights." All in all, the sand creations took up around 28,000 square meters, which is equivalent to the size of four soccer fields. The central sculpture weighed more than 10,000 tons and stood at more than 15 meters tall. Attractions throughout the park included a sand café, a maze for children, and a main stage for performances.

Graphene Conducts Electricity 10 Times Faster Than Expected



Physicists have produced nanoribbons of graphene - the single-atom-thick carbon - that conduct electrons better than theory-predicted even for the most idealized form of the material. The finding could help graphene realize its promise in high-end electronics, where researchers have long hoped it could outperform traditional materials such as silicon. In graphene, electrons can move faster than in any other material at room temperature. But techniques that cut sheets of graphene into the narrow ribbons needed to form wires of a nano-scale circuit leave ragged edges, which disrupt the electron flow. Now a team led by physicist Walt de Heer at the Georgia Institute of Technology in Atlanta has made ribbons that conduct electric charges for more than 10 micrometres without meeting resistance - 1,000 times farther than in typical graphene nanoribbons. The ribbons made by de Heer's team in fact conduct electrons ten times better than standard theories of electron transport they should, say the authors. This unimpeded motion means that circuits could transmit signals faster and without the overheating issues that hamper typical semiconductor chips. The results suggest that the electrons move down the edges of the ribbons more like light travels down an optical fibre, rather than the way electrons normally bump and scatter as they move in a standard conductor, says de Heer.

Supergrids May Make Highly Efficient DC Power Grids Practical

High-voltage DC power lines can efficiently transport electricity over thousands of kilometers and for long distances underwater, outperforming the AC lines that dominate transmission grids now. But for a century, AC prevailed because high-voltage DC could be used only for point-to-point transmission, not to form the integrated grid networks needed for a stable electricity system. However, Swiss conglomerate ABB has solved the main technical hurdle to such grids. It has developed a practical high-voltage DC circuit breaker that disconnects parts of the grid that have a problem, allowing the rest to keep working. DC grids would be more efficient at connecting far-flung sources of renewable energy, allowing utilities to average out local variations in wind and solar power while bringing power to areas without much sunshine or wind. Solar power from the Sahara could power cloudy Germany, and wind power from all over Europe could keep the lights on at night. The result: more reliable renewable energy.

Sensors in Soil Help Farmers Get More Crop per Drop

Scientists will soon be studying the results of several small bundles of electronics that have been ploughed into fields throughout the UK. The sensors will measure soil temperature and moisture content, then transmit those measurements wirelessly to the surface. It is the kind of information farmers around the world need to conserve water while still growing enough crops to feed an expanding population. Currently being tested in lab soil at the University of Manchester, UK, the sensors are cheap to produce, require little power and can be left to gather information in the soil for years without maintenance. They use radio frequency identification to communicate and harvest a small amount of power from an RFID reader mounted on a tractor that collects the data as it moves over each node. By understanding exactly how much moisture is in the soil, entire rotations of a pivot can be saved, along with thousands of liters of water. The driving force for this kind of technology is rising population, which is expected to increase by 40% by 2050. Currently, about 70% of our freshwater resources are used for agriculture and that figure is set to increase according to future demands.

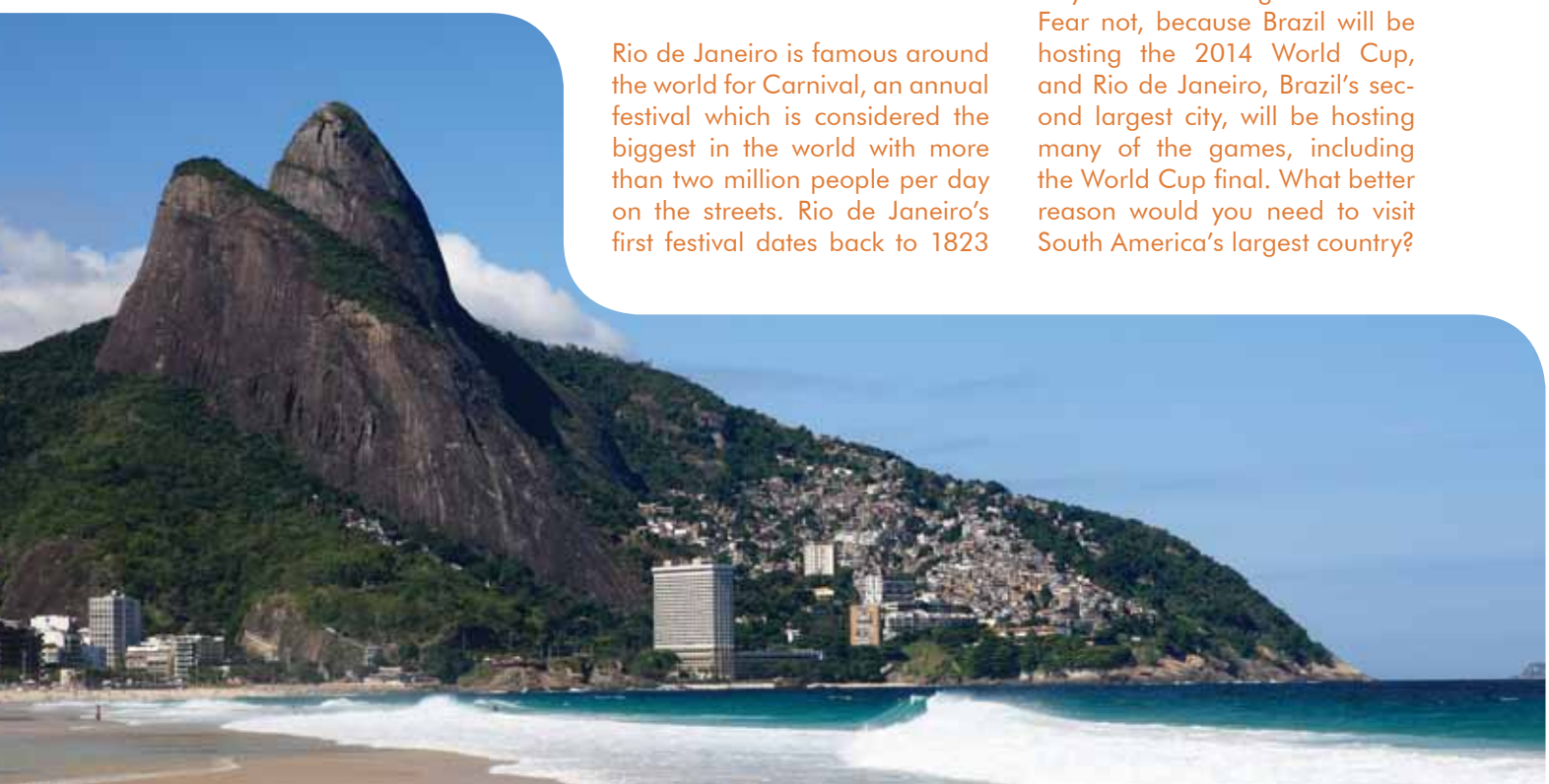
New Robots Learn to Navigate Guided by External Stimuli

Researchers of Freie Universität Berlin, of the Bernstein Fokus Neuronal Basis of Learning, and of the Bernstein Center Berlin and have developed a robot that perceives environmental stimuli and learns to react to them. The scientists used the relatively simple nervous system of the honeybee as a model for its working principles. To this end, they installed a camera on a small robotic vehicle and connected it to a computer. The computer program replicated in a simplified way the sensorimotor network of the insect brain. The input data came from the camera that - akin to an eye - received and projected visual information. The neural network, in turn, operated the motors of the robot wheels - and could thus control its motion direction. The outstanding feature of this artificial mini brain is its ability to learn by simple principles. In the learning experiment, the scientists located the network-controlled robot in the center of a small arena. Red and blue objects were installed on the walls. Once the robot's camera focused on an object with the desired color-red, for instance-, the scientists triggered a light flash. This signal activated a so-called reward sensor nerve cell in the artificial network. The simultaneous processing of red color and the reward now led to specific changes in those parts of the network, which exercised control over the robot wheels. As a consequence, when the robot "saw" another red object, it started to move toward it. Blue items, in contrast, made it move backwards.

Travel
Rio De Janeiro

Are you planning to escape Kuwait's summer heat this summer? Are you looking for a destination, but still haven't been able to make a final decision? If beautiful weather, beautiful people and a passion for life interest you, look no further than Brazil's Rio de Janeiro.

Rio de Janeiro is famous around the world for Carnival, an annual festival which is considered the biggest in the world with more than two million people per day on the streets. Rio de Janeiro's first festival dates back to 1823 and features a colorful parade of floats and dancers that never ceases to entertain visitors from near and far who journey to Brazil to take part in the special event. However, Carnival takes place in February, so summer travelers will have to find other ways of entertaining themselves. Fear not, because Brazil will be hosting the 2014 World Cup, and Rio de Janeiro, Brazil's second largest city, will be hosting many of the games, including the World Cup final. What better reason would you need to visit South America's largest country?



Eat

In Rio de Janeiro you can probably find something to fit any craving. A good approach to local food is "comida a kilo" - buffet style restaurants where you pay by the weight of the food on your plate. Don't miss Brazil's most famous dish, the feijoada, a black bean stew filled with big chunks of meat. Along with the feijoada, you also get some colorful side dishes that come with it, such as rice, cassava (roasted manioc), collard greens and some orange slices to sweeten things up a bit.

Beaches

Even the most seasoned tourist will find the beaches here quite amazing. They are wide and clean, with soft white sand. The main beaches from Leme to Barra have plenty of services for the beach goers, including free showers at the beach, wet trails to walk on cool sand, clean pay toilets, lifeguards and police, tents and chairs for rent, soft drinks and food. Commerce is common in Rio's beaches, with thousands of walking vendors selling everything from sun glasses or bikinis to fried shrimp to cooling beverages (try mate com limão, a local ice tea mixed with lemonade, or suco de laranja com cenoura, orange and carrot juice). For food, there is also empada (baked flour pastry filled with meat or cheese), sanduíche natural (cool sandwich with vegetables and mayo) and Middle Eastern food (Kibbehs and pastries). Vendors typically shout out loud what they're selling, but they won't usually bother you unless you call them. All along the beaches there are also permanent vendors who will sell you drink and also rent you a beach chair and an umbrella for a few Reais.

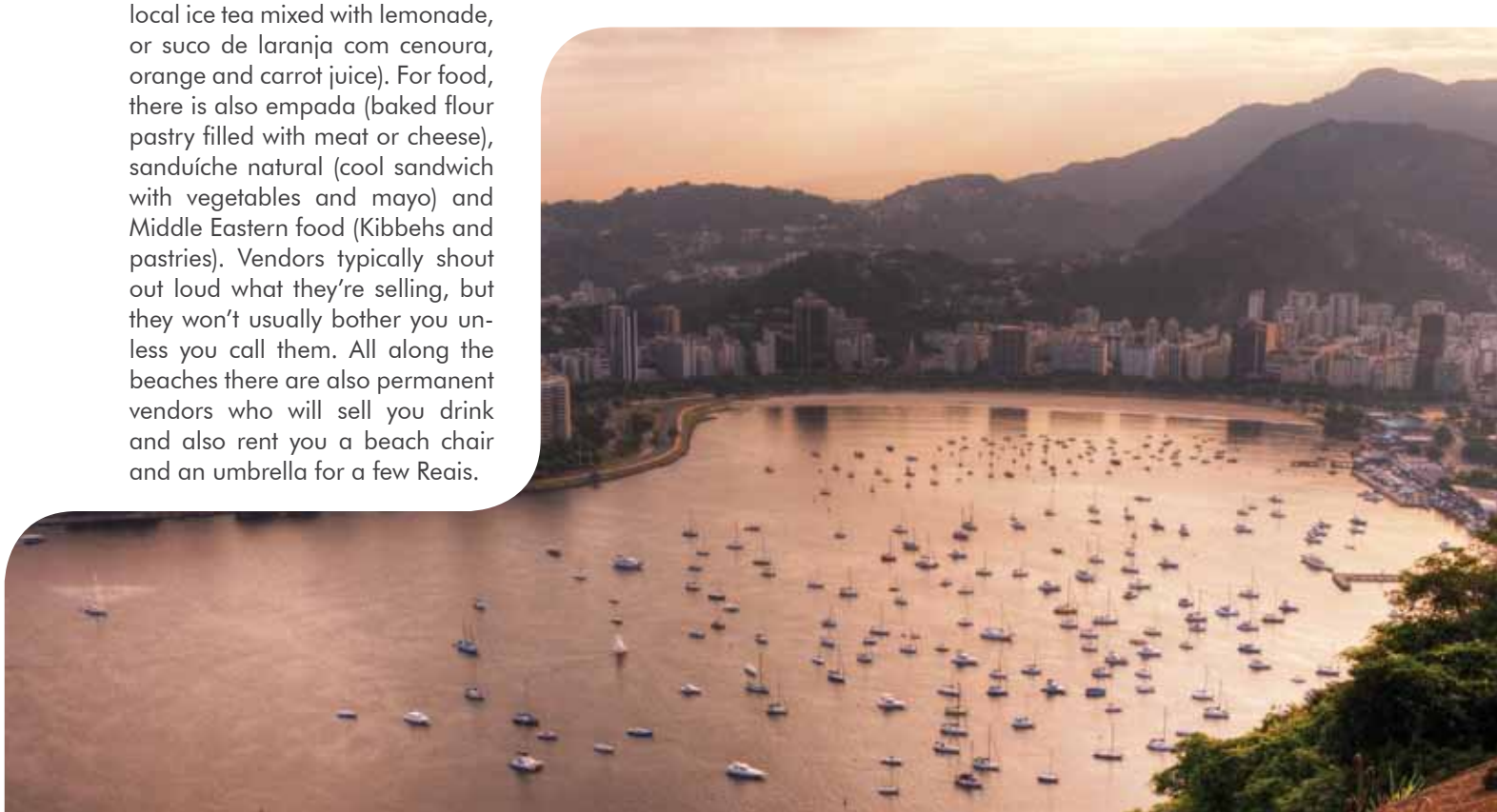
Things to Know

It is a common mistake to think of Rio de Janeiro as Brazil's capital, a distinction it lost on April 21, 1960 when Brasilia became the capital. Beaches such as Copacabana and Ipanema, the Christ the Redeemer statue, the stadium of Maracanã and Sugar Loaf Mountain are all well-known sights of what the inhabitants call the "Marvelous City." These are also among the first images to pop up in travelers' minds, along with the Carnival celebration.

In order to fully enjoy your trip the traveler should pay attention to simple things. Avoid the downtown area, especially Saara, after dark. Although downtown is a relatively safe place during the day, after-dark all the people who work there have already gone home. If you are going to a theater or a show, it's all right; but do not wander in those dark streets by night. Go to Ipanema beach, all lighted and policed during the night, though even Ipanema is not entirely safe for those who obviously look like tourists.

History

The city of Rio de Janeiro was founded in 1565 by the Portuguese as a fortification against French privateers who trafficked wood and goods from Brazil. Piracy played a major role in the city's history, and there are still colonial fortresses that can be visited to this day. For the next two centuries it was an unimportant outpost of the Portuguese Empire, until gold, diamonds, and ore were found in Minas Gerais in 1720. When Napoleon invaded Portugal, the Royal Family moved to Brazil and made Rio capital of the Kingdom (so it was the only city outside Europe to be capital of a European country). When Brazil became independent in 1822, it adopted Monarchy as its form of government (with Emperors Pedro I and Pedro II). Many historians and Brazilians from other places say cariocas are nostalgic of the Royal and Imperial times, which is reflected in many place names and shop names. In 2009, the city won their bid to host the games of the XXXI Olympics in the summer of 2016. This was the fifth bid by the city, whose 1936, 1940, 2004, and 2012 bids lost.



Health

Understanding Sleep Deprivation

Sleep deprivation is a commonplace occurrence in modern culture. Every day there seems to be twice as much work and half as much time to complete it in. This results in either extended periods of wakefulness or a decrease in sleep over an extended period of time. While some people may like to believe that they can train their bodies to not require as much sleep as they once did, this belief is false.

Sleep is needed to regenerate certain parts of the body, especially the brain, so that it may continue to function optimally. After periods of extended wakefulness or reduced sleep, neurons may begin to malfunction, visibly affecting a person's behavior. Some organs, such as muscles, are able to regenerate even when a person is not sleeping, so long as they are resting. This could involve lying awake but relaxed within a quite environment. Even though cognitive functions might not seem necessary in this scenario, the brain - especially the cerebral cortex - is not able to rest, but rather remains semi-alert in a state of "quiet readiness."

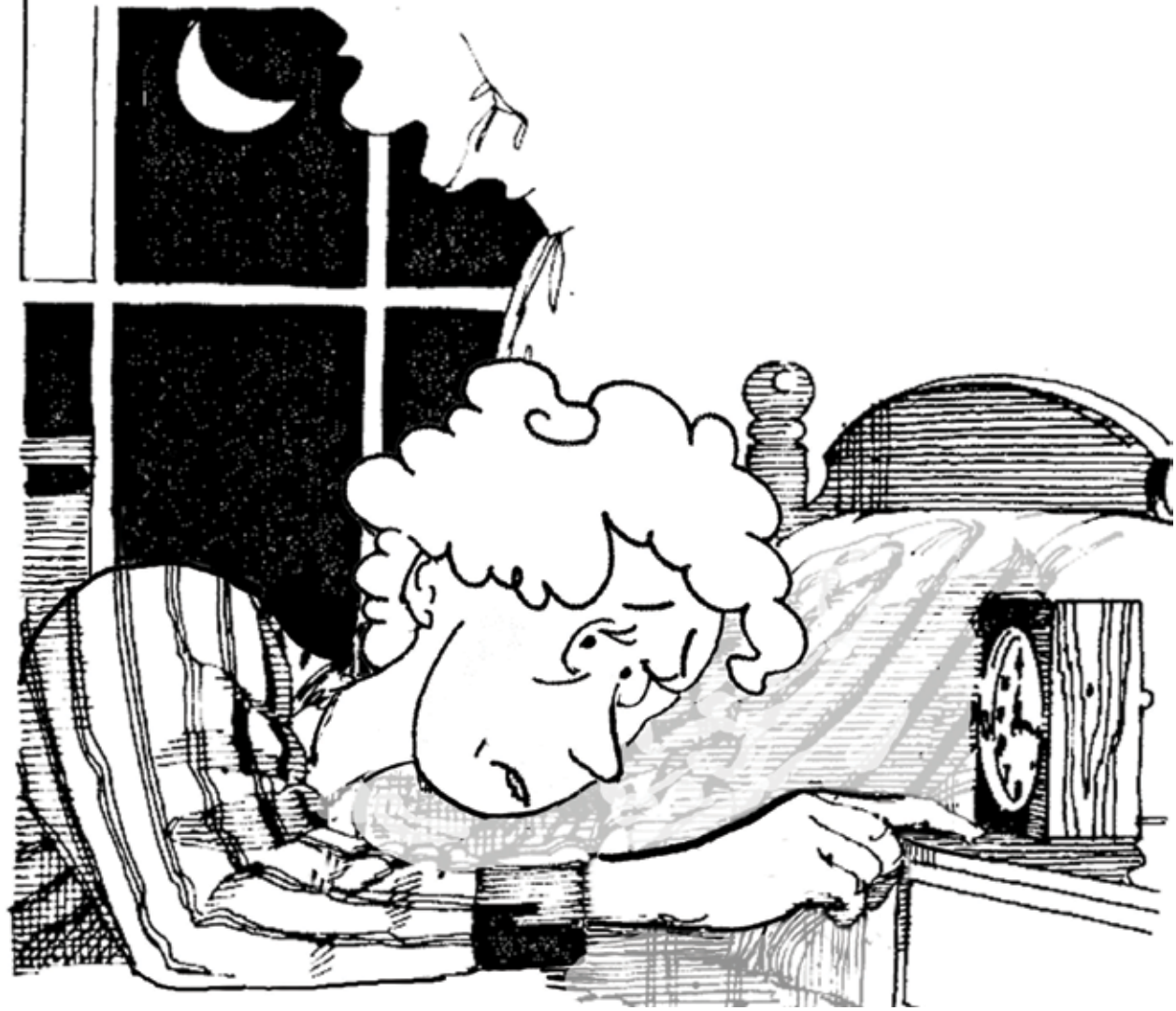
Certain stages of sleep are needed for the regeneration of neurons within the cerebral cortex while other stages of sleep seem to be used for forming new memories and generating new synaptic connections. The effects of sleep deprivation on behavior have been tested with relation to the presence of activity in different sections of the cerebral cortex.

The temporal lobe of the cerebral cortex is associated with the processing of language. During verbal learning tests on subjects who are fully rested, functional magnetic resonance imaging scans show that this area of the brain is very active. However, in sleep deprived subjects there is no activity within this region. The effects of this inactivity can be observed by the slurred speech in subjects who have gone for prolonged periods with no sleep.

Even severely sleep deprived people are still able to perform to some degree on a verbal learning test. This implies that some other area of the brain must become active to compensate for the loss of temporal lobe functioning. In fact, activity can be seen in the parietal lobe that is not present during verbal learning tests using rested subjects. Greater activity within this region corresponded to better performance by subjects in research studies. Still, sleep deprived people do not perform as well on these tests as do fully rested subjects. One possible reason for the poorer performance after missing sleep, aside from unregenerated neurons, could be the fact that since the parietal lobe is not usually used to performing tasks such as these, it is not as adept at carrying them out. Therefore, when control switches from the temporal lobe to the parietal lobe, some speed and accuracy is naturally lost. Interestingly, sleep deprived subjects have been shown to have better short-term memory abilities than their well-rested counterparts. Since memory is associated with this region of the cerebral cortex, the fact that it is already active in sleep deprived people could make it easier for new synapses to be created, thus forming new short-term memories more easily.

While activity is seen within the parietal lobes of rested people as they think through math problems, no corresponding activity is visible within the brains of sleep-deprived subjects. Also, no new area of the brain becomes active while the sleep deprived people work on math problems. Since sleep deprived people can still complete math problems, albeit with less speed and accuracy than a well-rested individual, this data implies that a region of the brain already in use is used for this task.

The frontal lobe is the most fascinating section of the brain with relation to sleep deprivation. Its functions are associated with speech as well as novel and creative thinking. Sleep deprived test subjects have difficulties thinking of imaginative words or ideas. Instead, they tend to choose repetitious words or clichéd phrases. Also, a sleep-deprived individual is less able to deliver a statement well. The subject may show signs of slurred speech, stuttering, speaking in a monotone voice, or speaking at a slower pace than usual. Subjects in research studies also have a more difficult time reacting well to unpredicted rapid changes. Sleep deprived people do not have the speed or creative abilities to cope with making quick but logical decisions, nor do they have the ability to implement them well. Studies have demonstrated that a lack of sleep impairs one's ability to simultaneously focus on several different related tasks, reducing the speed as well as the efficiency of one's actions. A person may be able to react to a complex scenario when suddenly presented with it but, similar to the verbal tests, the subject will most likely pick an unoriginal solution. If presented with a similar situation multiple times with slight variations in the information presented, the subject chooses the same solution, even though it might not be as applicable to the new scenario.



Part of the frontal lobe, the prefrontal cortex, has several functions specifically coupled with it. Judgment, impulse control, attention, and visual association have all been related to this region of the cerebral cortex. A recent study has shown that the prefrontal cortex, usually the most active area of the brain in rested individuals, becomes more active as a person remains awake for long periods of time. This region regenerates during the first stage of sleep, giving a person the ability to feel somewhat refreshed after only a short nap. The length of the first stage of sleep cycle is somewhat dependent upon how long the person had previously been awake. The longer the period of wakefulness, the longer the brain remains in the first stage of sleep. When the brain enters into the REM stage of sleep the prefrontal cortex is active once more.

The implications of this data seem to be fairly important in supporting the location of the I-function within the brain. The prefrontal cortex is active whenever a person is awake, no matter how little sleep they have had. Also, this area is active while dreaming. Since the individual is aware of him or herself during both of these instances, but is not aware during the stages of sleep when the prefrontal cortex is shut down, it seems logical that the I-function is located within this region. This indicates that the I-function is what is resting and regenerating during the first stage of sleep. It would be interesting to study prefrontal cortex activity while a person is conscious, but unaware of his or her actions, due to an influence such as drugs or alcohol. According to the results of the sleep deprivation studies, little or no activity should be seen in the prefrontal cortex at any time when the individual is unaware of his or herself.

Symptoms of Sleep Deprivation

One of the symptoms of prolonged sleep deprivation is hallucinations. This could also be related to the I-function since it is the system that integrates the input from all other areas of the brain. If the neurons composing the I-function become too taxed then the picture in the head that the I-function produces may be more dissimilar from reality than usual. The neurons, under pressure to continue functioning but unable to perform optimally, create an image useful enough for a person to see most of his or her surroundings. Metabolic activity in the prefrontal cortex can drop as much as eleven percent after a person has missed

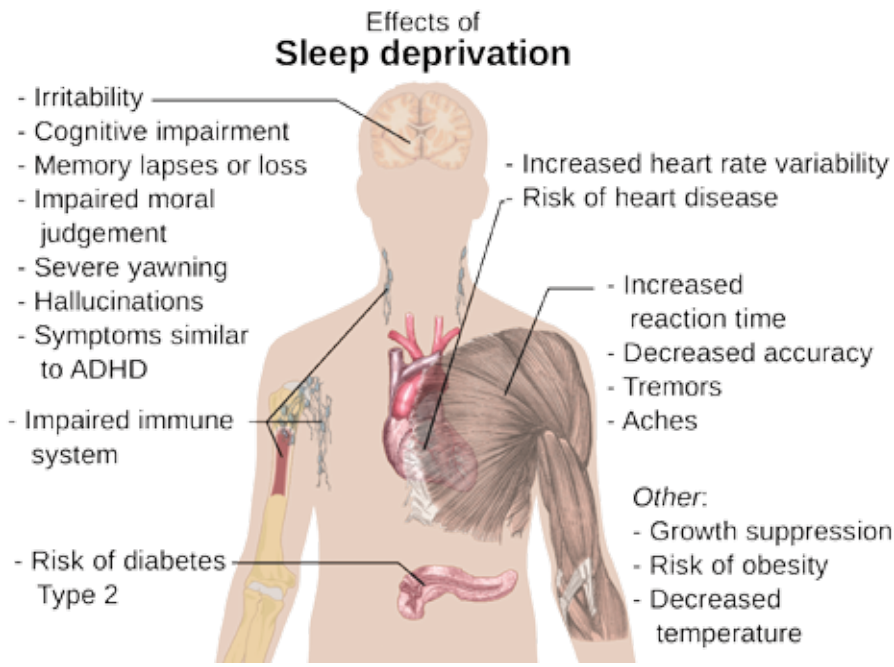
sleep for only twenty four hours. As a person loses more sleep or continues to receive less-than-adequate amounts of sleep, the neurons become even more taxed and the I-function may begin to generate even less coherent images, possibly resulting in temporary insanity.

Another piece of evidence supporting the location of the I-function is that mammals have REM sleep whereas cold-blooded animals do not and mammals have a neocortex, located within the prefrontal cortex, while cold-blooded animals do not. REM sleep stimulates areas of the brain used for learning and memory. When a person is taught a new skill, his or her performance does not improve until he or she receives at least eight hours of sleep. An extended period of sleep ensures that the brain will be able to complete the full sleep cycle, including REM sleep. The necessity of sleep for learning could be due to the fact that sleep increases the production of proteins while reducing the rate at which they are broken down. Proteins are used to regenerate the neurons within the brain. Without them, new synapses may not be able to be formed, thus limiting the amount of information a sleep-deprived individual can maintain.

One of the possible side effects of a continued lack of sleep is death. Usually this is the result of the fact that the immune system is weakened without sleep. The number of white blood cells within the body decreases, as does the activity of the remaining white blood cells. The body also decreases the amount of growth hormone produced. The ability of the body to metabolize sugar declines, turning sugar into fat. One study stated that people who sleep less than four hours per night are three times more likely to die within the next six years. Although the longest a human has remained awake was eleven days, rats that are continually deprived of sleep die within two to five weeks, generally due to their severely weakened immune system.

In a way sleep deprivation studies help us to study the relationship between the brain and behavior in a very unique way by observing how a person's behavior changes as the brain shuts down. By taking images of the brain showing where activity is located, it is possible to correlate the behavior exhibited by a subject with his or her brain patterns.

Just like a person cannot jog for three continuous days, a person's brain cannot operate without rest breaks. Since different regions of the brain rest during different stages of the sleep cycle, sleep cannot be cut short. In fact, if the brain does not receive a break it will soon begin to shut down for periods of microsleep. This is essentially several seconds of actual sleep; delta waves that interrupt the regular EEG of an awake person thereby impairing his or her continuity of cognitive function. Microsleep generally happens directly before performance failure occurs. Without sleep our brains deteriorate, and if the argument that brain = behavior is true, then our behavior will also suffer accordingly.



Local Event

KOC Launches "Build, Don't Destroy" Campaign

Commuters who make the drive to KOC from the downtown area and other drivers who pass Ahmadi to South Kuwait may have noticed some bright new changes to some of the bridges over King Fahad Expressway. As most readers have already seen, the Adan Bridge has recently been painted over in a multitude of colors which depict abstract scenes of the environment and various operations that KOC is known for. While many people have probably seen the bridge, some might be wondering: "What's the story behind it?"

The painting of the bridge was one result of the recent work conducted by the Kuwait Voluntary Work Center's "Build, Don't Destroy" campaign. The Kuwait Voluntary Work Center, which is headed by Sheikha Amthal Al-Ahmad Al-Sabah, recently partnered with KOC to recruit a number of volunteers for a beautification program around Ahmadi. A large number of young students rose to the occasion and helped paint Adan Bridge, which can now be appreciated by motorists on their daily drives.

During the inauguration of the freshly painted bridge, Chairperson of the Kuwait Voluntary Work Center Sheikha Amthal Al-Ahmad Al-Sabah expressed her satisfaction with the hard work put forth by the young volunteers. Meanwhile, KOC CEO Hashem Hashem maintained that the Company's contributions during such campaigns demonstrated KOC's eagerness to foster good values among the Kuwaiti youth. He added that the "Build, Don't Destroy" campaign was supervised by the Kuwait Voluntary Work Center and is aimed at beautifying various areas around Kuwait.

Internal Report

KOC Upholds Its Environmental Commitments

Kuwait Oil Company recently participated in the American University of Kuwait's "Liberation Village" Carnival. KOC's goal during the event was to highlight the tremendous efforts put forth by the Company and the Kuwait Fire Teams in extinguishing the oil fires after the liberation of Kuwait in 1991.

KOC has established many projects to restore the environment after the invasion, such as the Abdaliya Project, the Marine Colony and treating contaminated soil, in addition to many other projects and initiatives. The Company has also participated in international environmental conferences and presented a number of papers related to these issues.

Recently, KOC held the Clean Up Arabia campaign, which focuses on utilizing help from volunteers to clear trash from Kuwait's beaches while creating an atmosphere of awareness that focuses on the importance of keeping a healthy environment. The purpose of the campaign was to not only clean up Kuwait's beaches, but rather it had the additional benefit of raising awareness among citizens and residents alike to preserve the environment.

Maintaining the environment is one of the most important objectives within KOC's CSR strategy, and the Company is proud to participate in events that spread environmental awareness and highlight the role of the Kuwaiti youth in this domain.

1950s
Ahmadi Hospital

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