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Contents

Letter from the Editor 2

Minister of Oil Discusses Oil & Foreign Policy at Kuwait Diplomatic Institute 3

National and Liberation Day Celebrations 4

5th Town Hall Meeting 6

Impact of Drilled Solids in Drilling Fluid 10

KPC Organizes International Traffic Conference 13

A Display Center for the Future 14

KOC Organizes 3rd IT Exhibition 18

Together We Care 20

KOC Honors Long-Serving Employees 23

KOC Takes Part in Production Optimization Challenges Conference 24

Maintaining ‘U’ and ‘L’ Shaped Drain Segments 28

KOC Implements ALES: Artificial Lift Expert System 32

KOC Recovers 90,000 Barrels of Spilled Oil Per Month 37

Japan Extracts Methane Hydrate Gas 38

Global Single Sensor Acquisition and Processing: Past, Present and Future 40

Hi-Tech 42

Understanding Internet and Computer Addiction 44

KOC Celebrates National Occasions at Spring Camp 46

KOC Publishes Book About Oil in Braille 47

Ahmadi Governor Congratulates HH the Amir as KOC Celebrates 48
The accomplishments of this past quarter have left Kuwait Oil Company and Kuwait in general with very much to be proud of. First and foremost, KOC helped Kuwait celebrate its 52nd Anniversary of Independence, 22nd Anniversary of Liberation, and seventh anniversary of the ascension of H.H. the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah to power. KOC, of course, was an integral part of the celebrations and provided another impressive light display which was enjoyed by many people throughout Kuwait who visited Ahmadi to see the unique decorations.

There is also much to be proud of in terms of accomplishments that the Company has witnessed. Over the last quarter, KOC has broken ground on a new Display Center, hosted the 5th Town Hall Meeting Between KOC and Contractors, and attended a number of international oil and gas conferences, where we have gained valuable knowledge related to our field while also sharing our oil and gas experiences and expertise with others.

As the new DMD of Administration and Finance and Editor-in-Chief of KOC publications, it is my pleasure to welcome the creation of two new and very important directorates: The Planning & Commercial Directorate, headed by Captain Ahmad Mohammed Al-Rasheed, and the Corporate Services Directorate, headed by Ismail Abdullah Ali. In addition to the renaming of a number of directorates, our new DMDs include Ayad Mohammed Al-Kandari, who has been appointed as DMD Drilling & Technology, and Adnan Darwish Al-Aradi, who was appointed as Deputy Managing Director (West Kuwait).

Indeed, the future looks bright for KOC, and we are working hard to ensure that the way forward for our Company is clearly marked and that our goals and objectives are well-defined. This includes making the necessary preparations for future plans and providing all directorates with the resources they need to realize our goals. In this regard, KOC recently hosted the 3rd IT Exhibition, which showcased a number of technologies that help create efficiency and enhance productivity.

Thanks to these efforts, the first quarter of 2013 has ushered in a range of new accomplishments that all KOC employees can be proud of. 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.
Minister of Oil Discusses Oil & Foreign Policy at Kuwait Diplomatic Institute

The Saud Al-Sabah Kuwait Diplomatic Institute recently organized a lecture entitled “Kuwait Oil Industry” as part of its activities that were arranged to review and define Kuwait’s foreign policy and the general direction that the State is being steered toward.

The lecture was given by Deputy Premier, Minister of Foreign Affairs, His Excellency Sheikh Sabah Al-Khalid Al-Sabah, His Excellency the Minister of Oil and Chairman of KPC’s Board of Directors, Hani Hussein and HE the Minister of Information Sheikh Salman Al-Hummoud along with a number of accredited ambassadors to Kuwait.

In his keynote speech, Hussein hailed the substantial role of the Kuwait Diplomatic Institute in properly preparing distinguished Kuwaiti students to represent their country abroad. He further thanked the Ministry of Foreign Affairs and the Saud Al-Sabah Kuwait Diplomatic Institute for organizing such lectures, adding that it was important to remember that Kuwait’s large and robust oil industry is the key factor in the local economy of the country.

The Minister of Oil also briefed the audience on the methods pertaining to the pricing policy of Kuwaiti crude oil, its distillates, and the most important consumer markets. Hussein also indicated that oil prices will most likely increase in the future and cited the anticipations of various economists and experts from around the world as reference for this claim. However, he also maintained that the circumstances of supply and demand as well as geopolitics and new developments in the field of oil and gas influence the price of oil around the world.

Hussein also highlighted the oil sector’s 2030 strategic directions which are aimed at increasing production to 4 million bpd by 2020 and keeping this rate until 2030.

During the event, Bader Al-Saad, Managing Director of the Public Authority for Investment (PAI), spoke about Kuwait’s various international investments. In addition, Abdulaziz Al-Sharekh, Director of the Kuwait Diplomatic Institute, spoke for some length about Kuwait’s overseas investments and their role in the country’s foreign policy.
KOC C&MD Sami Al-Rushaid recently inaugurated Ahmadi’s lightings and decorations on the advent of KOC celebrations for National and Liberation Day. DMD (NK) Hosnia Hashim and a number of Group Managers, TLs and local media were also in attendance.

Al-Rushaid 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, the Seif Palace, Kuwait Towers, the Liberation Tower and a number of structures that embodied the past and present in the State of Kuwait.

During the event, Al-Rushaid invited citizens and expatriates to visit Ahmadi with their families to enjoy the city’s attractive atmosphere. He also expressed his greetings and appreciation to the wise Kuwaiti leadership and the honorable people of Kuwait on the occasion of the National and Liberation Day celebrations.

Meanwhile, DMD (NK) Hosnia Hashim said 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.

Corporate Services Group Manager Esmaeil Ali Ahmad added that the preparations for these occasions begin 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 suzerainty. 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.
The 5th Town Hall Meeting and Exhibition between KOC & Contractors was held recently at Hall Number 8 of the Mishref International Fairgrounds. The Town Hall Meeting between KOC and contractors is an important initiative that KOC started in 2009 with the objective of strengthening the business partnership with its contractors and subcontractors towards achieving excellence in performance in line with KOC’s strategic objectives. The Town Hall meeting also serves as an excellent opportunity for KOC to exchange views with the community and provide them with information about KOC activities and operations.

This year’s Town Hall Meeting and Exhibition set a large and new precedent for future Town Hall Meetings. By being held in one of Mishref Fairgrounds’ largest halls, the Town Hall Meeting was able to go above and beyond all previous Town Hall Meetings. More than 100 exhibitors from a variety of fields set up booths around the main KOC platform and stage. Local and international visitors alike were able to learn more about KOC operations while also learning about the work that is conducted by KOC’s many partners and contractors.

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 speech, C&MD Sami Al-Rushaid maintained that because the oil industry plays such an important role in Kuwait’s livelihood and that it was in fact the backbone of the nation’s economy, it is important for KOC to “exchange views, information and experiences in an atmosphere of full transparency, either with contractors and suppliers, or with the Kuwaiti public.”

The KOC Chairman added that the Company was on the precipice of facing new challenges, including the “unprecedented expansion of oil activities within the framework of KOC’s strategic plans to increase production capacity to 4 million barrels per day by 2020 and to maintain these rates until 2030, along with the production of gas, so that the Company may obtain the desired financial returns and contribute to promoting the economic development of Kuwait.”

C&MD Sami Al-Rushaid went on to say that in order for this planned expansion of production to occur, KOC would be required to sign new contracts so that Company goals could go on track to becoming a reality. In addition, he...
added that the signing of new contracts would put KOC in touch with experienced companies that work in the oil and gas industry, which will help KOC take maximum advantage of available technical expertise while keeping abreast of modern developments in the oil industry.

"From this standpoint, the Company intends to carry out several major capital projects during the next five years with an estimated total value of about 2.9 billion Kuwaiti dinars. These projects include the establishment of Gathering Centers, manifolds, extended lines to transport crude oil, the establishment of laboratories for the injection of produced water, building infrastructure and implementing programs for the development of gas and heavy oil, and related surface and subsurface facilities and services," the Chairman said.

The Company is fully aware of its leading role in supporting national production, and it is keen on pushing the wheel of the national economy forward in various fields, Al-Rushaid said. Despite the fact that the Company's operations require technical expertise and new technologies which are only available to a limited number of companies in the world, the Company has considered a clear strategic plan which aims to support private sector companies and increase their role in oil activities while preparing more local companies with opportunities to enhance their capabilities and expertise so that they can compete with major companies operating in the oil industry. Therefore, this exhibition will provide an important opportunity for both small and large local businesses to communicate with international companies in order to create numerous opportunities with each other in various fields, the C&MD said.

In terms of what the 5th Town Hall Meeting and Exhibition Between KOC & Contractors sets out to accomplish, the C&MD maintained that the exhibition aims to promote communication among local and international companies on the one hand and between key groups and departments within KOC on the other. This, he said, will aid in the development of appropriate solutions and will allow the Company to respond to inquiries and questions raised by contractors and suppliers, especially with regard to the requirements of qualification and participation in the Company’s tenders.

"This exhibition will provide an opportunity to learn more about the Company's strategic projects, HSE systems and requirements. Moreover, the exhibition will be an excellent opportunity to learn more about the latest technologies and services offered by producers and contractors, which will contribute in the exchange and transfer of technology and expertise from international contractors," Al-Rushaid said.

While KOC has developed strategic plans for the expansion of its activities in order to maximize oil revenues and promote economic development in Kuwait, the KOC Chairman maintained that the Company can never overlook the important and vital role in its operations which includes maintaining public health, safety and the environment.

"Needless to say, KOC holds the highest regard for HSE standards, which requires complete understanding of HSE rules and regulations and full awareness of the serious consequences of not strictly adhering to rules governing the health, safety and lives of individuals and property. Therefore, KOC attaches great importance to HSE requirements and it has always sought to follow the latest international technologies related to
safety systems in its oil operations as one of the strategic goals that the Company is keen to preserve and promote. We are sure that our contractors are as keen as us in applying HSE systems, and that they spare no effort in working side by side with us to achieve this purpose as it is a shared responsibility which rests with all concerned parties.”

The Chairman then thanked the audience and said that it was his hope that KOC and its contractors would do everything in their power to renew their commitment to support the bonds of mutual cooperation between the participants to serve common interests and achieve desired goals.

The floor was then given to KNPC’s Bakhit Al-Rashidi, Deputy Managing Director for Planning and Local Marketing. During his speech to the audience, Al-Rashidi upheld the importance of the Town Hall Meeting and Exhibition, calling it “constructive” and “rewarding for the oil sector companies and suppliers.” He maintained that the meeting and exhibition does much in the way of building the relationships and tools necessary to enhance future business prospects for all involved with Kuwait’s oil and gas industry.

Al-Rashidi then told the audience about a number of projects KNPC was currently engaged in, particularly the two mega projects which include the New Refinery at Zour and the Clean Fuels Project in Mina Abdullah. In regard to these projects, Al-Rashidi maintained that “two state-of-the-art refining plants will emerge in 2017 and 2018 with a total throughput of 1.4 million barrels of crude oil per day.” This, he said, will shape the future of Kuwait’s oil refining industry over the coming decades.

In addition, the KNPC DMD referred to the Town Hall Meeting as a “vital opportunity for face to face communication between work partners to further enhance mutual cooperation.” He added that “Cooperation with international partners who have the know-how, the expertise and the technology but above all the commitment to honor their obligations is embedded in our principles, and we strongly believe that international expertise is essential for upgrading local skills while indigenous human resources & facilities should seize every possibility to benefit from interaction with multinational experiences.”

Al-Rashidi also told the audience that KNPC was committed to providing local contractors with opportunities to “receive their deserved share of the huge business emanating from the scores of sustainability projects launched by KPC and its subsidiaries.”

He then concluded his speech by thanking KOC for the hospitality provided and commended the company for hosting such an organized and beneficial event.

Following the KNPC DMD’s speech, Ibrahim Faraj, Commercial Support Group Manager from KOC, delivered his opening address.

The KOC Manager told the audience that the Company does much in the way of ensuring that important projects are completed by qualified and experienced contractors and suppliers who can meet the requirements of the very sensitive oil and gas industry.

The KOC Manager went on to say that the selection process requires KOC to make sure of the efficiency of contractors and suppliers in order to maintain the safety and efficiency of oil facilities and to avoid exposing them to risk due to contracting with incompetent businesses. He added that a significant qualification for contractors is that they operate in accordance with the conditions and standard specifications, particularly HSE requirements, so as to ensure their abilities while being able to carry out their contractual responsibilities.

“From this standpoint, KOC has taken several steps to attract local and international contractors and suppliers for qualification and competition. The Company develops its contracts in order to reduce risks to contractors and to motivate them as well. At the same time, it has formed a specialized team to handle the qualification operations
at its various stages around the year, including the development of qualification requirements and making them within the reach of all companies. We seek to amend the qualification procedures to be easier and more effective than ever before, as well as the introduction of a variety of job categories from various disciplines in the oil and gas industry,” Faraj said.

The number of job categories accredited by the Company reached 121 main and sub categories, while the number of categories of qualification of suppliers reached 127 categories, and the total number of qualified contractors reached 631 certified companies from 47 different countries. The number of manufacturers reached 1,583 from 53 different countries.

Faraj went on to say that “as a leading national company which is keen on boosting economic development in the country, KOC continues to support local producers and contractors in all available fields, and this has always been KOC’s goal and approach, which is in line with the policies and directions to support the private sector and involving it in the activities of the oil industry where possible.”

In order to achieve this goal, he said, the Company has adopted a clear plan aimed at increasing the role of private companies in petroleum activities on several fronts. The initiatives and steps that have been taken include the following:

- Expanding the contribution of private sector companies in the Company’s contracts, where the number of contracts with them reached about 475 contracts, at a rate of no less than 70% of the number and value of contracts applicable to the Company.
- The development of manufacturers and contractors for services, projects, oil well services and exploration to be able to contribute to the Company’s activities and compete with foreign companies operating in the oil and gas industry.
- At the level of qualification of local companies, new job categories have been created specifically for the qualification of local contractors. They reached 21 main categories, including about 210 local contractors along with local contractors accredited on job lists shared with foreign companies.
- Encouraging local companies to achieve commercial communication and trade links with international contractors either through partnership or other types of commercial relations, in order to transfer modern technologies available to global companies to them and enhance their technical potentials while aiding in their development and acquiring the required expertise in the oil and gas industry.
- To encourage local businessmen and investors to set up factories to produce goods and materials related to the oil and gas industry, which would contribute to the economic development and create jobs for Kuwaitis.

KOC Commercial Support Group Manager Ibrahim Faraj thanked the audience for attending and said that he hoped the 5th Town Hall Meeting & Exhibition Between KOC and Contractors would prove to be a beneficial event for all involved.

Over the course of the exhibition, a number of KOC employees delivered presentations on the sidelines of the main exhibition. Topics included a presentation on Bidder Assessment Solutions by KOC’s Well Surveillance Group, Lessons Learnt from Recent Incidents by KOC’s HSE Group, and KOC Endeavors to Improve Contract Strategies by KOC’s Commercial Support Group.
The impact of drilled solids on drilling mud properties and the importance of solids control equipment are least understood in drilling operations. The performance of drilling fluid is not just dependent on the type of products being used in mud but also highly dependent on controlling/removing the solids which are being generated while drilling. Any good mud system can result in failure if the solids are not controlled; because solids always tend to increase and gradually deteriorate the mud properties. Practically one can drill with more solids in the mud but the overall performance will be down and the costs are usually high and hidden. Solids control plays an important role in successful well completion and cost saving. To get the maximum output from the drilling fluid and its performance, one has to understand the direct/indirect impacts of drilled solids on drilling operations.

**Types of Solids in the Mud**

Solid content is a measurement of total solids in the drilling mud. It contains drilled solids/cuttings, mud chemicals and weighing materials. This can be classified into three categories.

I. Soluble materials (eg. Salt)

II. Insoluble high gravity solids (HGS)  
   (eg. Barite, Hematite)

III. Insoluble low gravity solids (LGS) (eg. Drilled solids)

Soluble materials and insoluble high gravity solids are added into the mud system for increasing the mud weights and other additional properties.
Insoluble low gravity solids are drilled cuttings that are ground up so fine that cannot be removed by mechanical means. LGS are the worst enemy of the drilling fluids. In any mud system, the problems associated with solids are mainly due to low gravity solids. Controlling the low gravity solids are vital for the success. If the particle size is less than 5 microns, then the drilled solids remain in the mud.

**Indications of High Solids in the Drilling Fluid**

There are several indications from which one can monitor the solid build-up in the drilling mud.

- The first visible indication of solids building up on the mud is an increase in mud viscosity without the addition of a viscosifier. This takes place gradually and it is understood that most significant contribution to the fluid viscosity comes from the low gravity solids.

- Progressive increase in the plastic viscosity is another main indicator of building up of LGS in the mud. PV primarily depends on the size, shape and the number of solids in the mud.

- Sometimes in the mud, it can be observed that phenomenal increases occur in the YP and gel strengths. This happens due to high LGS in the mud system. In this case any mud treatment will be less effective.

- Increase in fluid loss and deteriorated filter cake.

**Effects of Drilled Solids on Mud Properties**

For years the drilling industry was not concerned with the buildup of drilled solids in the mud system and the mud was circulated as long as it could be pumped. Problems associated with higher solids, like funnel viscosity and plastic viscosity were countered by thinners and dilution. Action should be focused on eliminating the drilled solids instead of taking counter measures to treat the mud to be tolerant to the higher solids.

Removal of drilled solids will decrease the plastic viscosity and thus increase the low shear rate viscosity. This will bring larger, more easily removable solids to the surface. On the other hand, failure to remove the cuttings will increase the plastic viscosity and that will decrease the ability to bring up the cuttings to the surface and allow them to grind into finer particles.

When it is suspected that cuttings are not removed completely from the well, normal reaction is to increase the yield point and pumping of high viscosity pills. Sometimes increasing in YP to the significant level also increases the overall rheology of the mud. This develops another situation where shakers are not able to handle the flow which needs to be changed to coarser mesh size to handle the flow. Again this increases the finer solids in the mud system. Solids problem happens several times cyclically.

Any increase in drilled solids concentration on the drilling fluids between 4-5% has a direct effect on the quality of the filter cake. As the concentration of the drilled solids increase further, the filter cake becomes sticky which results in other drilling fluids related complications.

The situation of very fine particles arises where drilling fluid fails to remove all the drilled cuttings from the bottom of the hole due to which the drill bit grinds/drill the cuttings instead of the formation. Insufficient hole cleaning is another important reason for building up of solids in the drilling mud.

**Effect of Drilled Solids on Drilling Operations**

The drilled solids in the mud system impede every aspect of drilling operations. They directly affect operations by increasing pump pressure, wear, high fuel consumption, and increased wear on all rotating and circulating parts.

The significance of the solids control is that rate of penetration is closely related to the total solids in the mud. The graph shows the relation between the solids content and the drilling rate. The effects are drastic, in general, studies shows that over a range from 0 to 14% of solids in the mud, the required rig days increase by the factor of 3 and on the other hand if 14% of the solids were removed entirely the drilling rate would be increased by 400%. From the studies it is also observed that the average gain in drilling rate is around 10% for removing each 1% volume of solids from the mud.
Remedy

Drilled solids can be removed or reduced from the mud system by three ways to get the desired mud properties.

1. Mechanical Removal and Role of Solids Control Equipment: Removing the drilled solids as early as possible from the mud system with the help of solids control equipment is the best method and it reduces dumping and dilution of mud. Controlling drilled solids in the mud is totally dependent on the performance of solids control equipment which plays a major role in this method.

   Solids Control Efficiency = % or drilled solids removed / % of total solids drilled

Shale shakers are primary and front line equipment in controlling the solids in any mud system. Uniform screens setup depending on the flow rate and cuttings are important. De-sander and De-silters are normally used in non-weighted mud because they throw large amounts of barite along with drilled solids in weighted mud. The discharge from de-sander should have 2.5-5 ppg heavier than the active system and the discharge from the de-silter should be between 2.5-3.5 ppg heavier than the active system. These checks should be done regularly to check the performances of these equipment. De-sander and de-silter remove particle sizes finer up to 20 microns.

If the particle size is lesser than 20 microns then the option is centrifuge. High speed centrifuges should be used to control the particle size up to 2 microns. But by the given amount of volume handled in any section, it is not possible to treat all the mud through centrifuges. But certainly it reduces the amount of volume being dumped to control the mud weight.

If the particle size is less than 5 microns it is hard to remove them by mechanical means. In this case running centrifuges in barite recovery mode for the maximum time will be of help in reducing the LGS in the mud.

2. Dilution: Dilution is the option when the drilled solids are not able to be removed by the surface equipment and there is a narrow window of mud weight. Dilution is normally applied when the mud weights are less and it is not always possible when the mud weights are on the higher side. If LGS goes beyond 7% then with the help of particle distribution test, it needs to be diluted by increasing the liquid phase to keep the mud properties in the required range.

3. Dumping: This situation arises where the LGS are build up to such an extent that mud no longer responds to treatments and it is economical to dump the mud. This situations happen where the large hole sections are drilled with narrow window and mud weights are low. This option has limitations and is not applicable while using oil-based muds and expensive water-base muds like potassium formate.

Conclusions

- Performance of solids control equipment and the focus on drilled solids in the drilling mud is highly important for effective drilling operations. Periodic performance check of solids control equipment and training people for the maintenance of the equipment is highly important.

- The costs involved in under or poor performances of solids control equipment are very high and it is hidden. A deep drilling study shows that with better performing solids control equipment on the locations reduces the total amount of dumping by 50% to maintain the required parameters in water base mud sections of deep wells. The average cost saving would be around 8,500 KD/well in the WBM section alone with efficient performing solids control equipment.

- The option of dumping mud is not available when oil-based mud is used in drilling due to the environmental impacts associated with it. In such cases, utilizing centrifuges in barite recovery mode is highly helpful to reduce the low gravity solids. This will resolve most of the mud related problems like high rheology, high treatment cost etc.

- Deep drilling study on recycled oil-based mud showed that the drilled solids are very high to the unacceptable values. The recycled OBM should be checked regularly for the low gravity solids (LGS) and particle distribution test should be carried out to keep the finer solids under acceptable limit of (5-7% vol.) by dilution method.
Ahmadi Governor Congratulates HH the Amir as KOC Celebrates

On behalf of residents and all employees, mainly those in oil sector companies, Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij recently sent a cable of congratulations to His Highness the Amir Sheikh Sabah Al-Ahmad Al-Sabah on the occasion of the seventh anniversary of his assumption of the reins of power.

The governor issued his statement during a flag-raising ceremony held in the Ahmadi governorate’s building. Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij prayed to Allah Almighty to bless and guide His Highness the Amir to complete the march of goodness and prosperity of Kuwait. He also thanked all those who contributed in the ceremony from KOC, the Ministry of Information, Kuwait TV and Ahmadi Educational Zone.

For her part, Ahmadi Educational Zone Director Haya Al-Dousari said that her district has participated in this event for the seventh consecutive year. She added that during the ceremony the flag is raised to usher in the National Day and Liberation Day celebrations, noting that 40 schools took part in the celebrations.

KOC Celebrates

Meanwhile, in the presence of Acting DMD for Administration and Finance and DMD (NK) Hosnia Hashim, the Training and Career Development Group recently celebrated the beginning of Kuwait’s National and Liberation Day celebrations by hoisting the flag of the State of Kuwait.

During the ceremony, Hashim congratulated employees on the occasion of national celebrations and said that she hoped Kuwait will enjoy security and stability now and in the future. She encouraged employees to exert more efforts and said, “This Company is yours. It needs the ideas of young people who are the pillars of its development.”

For his part, Manager of Training & Career Development Group Saad Al-Azmi said, “We express loyalty to His Highness the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah on the 7th anniversary of his assumption of power. We hope that these celebrations will make Kuwaitis more unified and love each other for the best of Kuwait.”

In this regard, head of the Social Activities Committee within the group and Manpower and Redeployment Team Leader Adnan Al-Sabti thanked all group managers and team leaders for taking part in the event while wishing the best for Kuwait and KOC employees.
A Display Center for the Future

For more than 50 years, the KOC Display Center has served as one of the Company’s most-visited landmarks. Established in 1956, the KOC Display Center was built in order to share the story of the discovery and production of oil in Kuwait with the public. Heads of state and international diplomats, businessmen, students and the public have been guests to the Display Center over the years. Soon, however, the KOC Display Center will be moving to a brand new location near the entrance of Ahmadi.

The laying of the foundation stone and unveiling of official plans for the Sheikh Ahmad Al-Jaber Al-Sabah Oil & Gas Display Center was held recently during a tent ceremony at the proposed site where the Display Center is to be built. Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij Al-Sabah, KOC C&MD Sami Al-Rushaid, DMDs, Managers and other senior staff and KOC employees attended the event to learn more about the project and witness the official inauguration for construction of the project.

During the unveiling ceremony, Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij Al-Sabah said that the Sheikh Ahmad Al-Jaber Al-Sabah Oil & Gas Display Center will be a source of pride and a great asset for Kuwait Oil Company, Ahmadi and Kuwait because of the role it will serve as a scientific institute which tells the story of oil.
Following the unveiling of the memorial foundation stone of the Display Center, Al-Duaij made a statement in which he added that Ahmadi often receives heads of states and senior figures during their visits to Kuwait, and that in order to acquaint them with Kuwait and the oil industry, these individuals often visit the Display Center during their visits. He added that after the completion of the Display Center, Ahmadi Governorate will have the honor of hosting VIP visitors to tell them the details of the story of oil in Kuwait.

KOC C&MD Sami Al-Rushaid delivered the opening speech during the event and affirmed that the new Display Center will be named after Kuwait’s 10th ruler, H.H. the late Sheikh Ahmad Al-Jaber Al-Sabah. During his reign, H.H. Sheikh Ahmad presided over several notable achievements in Kuwait’s history, particularly the most important of all, which was the discovery and export of Kuwaiti crude oil.

“The KOC Display Center is truly a landmark, not only for KOC, but for our beloved country, Kuwait. Since its inception in 1956, the Display Center has played the very important role of sharing the history of Kuwait’s oil story with the public,” the Chairman said, adding “Since its establishment, the Display Center witnessed a series of expansions and renovations that kept pace with the growth of the Company. Recently, the need arose to build a new Display Center that is based on a modern vision that will enable it to serve larger segments of society, particularly students and researchers who are the focus of our attention and care.”
During his speech, Al-Rushaid told the audience that the construction period was projected to last for 22 months. After its completion, the KOC C&MD expressed his hope that the new Display Center would go above and beyond its goal of serving not only Kuwait’s oil sector, but all of Kuwait as a whole. The Chairman concluded his speech by thanking everyone involved with the project for the hard work and dedication they have shown to create this particular KOC vision into a reality.

Following the Chairman’s speech, Public Relations and Information Group Manager Abdul Khaliq Al-Ali took the stage. In many senses, the New Display Center has been Al-Ali’s brainchild, who has worked very hard since the beginning to ensure that the new Display Center would be built and equipped with the latest and most innovative technologies.

In his presentation to the audience, Al-Ali maintained that the team tasked with overseeing work for the Display Center had conducted extensive research on oil and gas display centers from around the world and that some of the most important ideas and interactive experiences they shared would be used as inspiration and motivation for the new Display Center.

“When we sat down to identify the objectives of the new Display Center, we considered who would be visiting the new facility in the future. Guests to Kuwait, researchers and students figured high on that list, which gave us the idea to build a national facility equipped with the latest technologies in so-called ‘educational entertainment.’ The new Display Center will be one which can accommodate a broad spectrum of visitors, ranging from heads of state and VIPs to students and visitors from around the world, with the common denominator being that everyone, regardless of age or status, can learn about Kuwait’s story of oil,” Al-Ali said.

At the conclusion of his comprehensive explanation of the project, Public Relations and Information Group Manager Abdul Khaliq Al-Ali thanked those in attendance for coming while also giving special thanks to everyone involved who had played a part in making the new Display Center a reality.
A Journey

The idea behind the building is to enable visitors to go on a journey through the world of oil and gas, starting with the main building and through the different halls until they reach the external garden. This will familiarize visitors with the world of oil and gas in an hour or two, according to the tour program they choose.

The journey will cover important information related to the oil industry, the geophysical theories regarding oil and gas, and the date of the discovery of oil and gas in the State of Kuwait. In the basement, visitors can take the lift, which can accommodate 26 people, to the 16-meter watch tower. On the way up, visitors can view a panorama of oil installations throughout Ahmadi and the export ports and refineries. On their way down, visitors can learn about the refining and export centers and gain useful information about oil products, where they go and what they are used for in order to get a comprehensive idea about this vital industry.

Project Description

The design of the building is based on the shell of the ammonite, an extinct marine animal that lived some 120 million years ago. The ammonite and other marine animals from its era are thought by scientists to have contributed to the formation of today’s oil reserves. The ammonite serves as both the symbolic and aesthetic inspiration of the building, with rooms distributed on the periphery of the building and surrounding central interior spaces, where the crust of ammonite forms a horizontal cap.

The project consists of a basement, a ground floor and first floor. The ground floor, with a projected space of 5,126 meters, will be comprised of the following:

• Main entrance, security and ticketing
• Management offices
• A display area of 420 square meters which will be used for exhibitions
• Multi-purpose conference room
• A conference hall that can accommodate up to 200 people, equipped with the latest audio-visual media, and a room for holding meetings and seminars for up to 30 people
• A 200-seat theater equipped with a display screen
• A library designated for oil research to serve oil sector employees and university students
• Prayer rooms for males and females.
• A media center that can be used to hold press conferences and media activities
• A special hall for VIP meetings and banquets with a private entrance
• A café and gift shop which can market oil and gas industry materials, like science centers in the world and in the State of Kuwait, with children's playgrounds in the form of oil installations.

In addition to the ground floor, the first floor and basement will be comprised of various offices, meeting rooms, exhibition halls, archives, and displays that provide visitors with information regarding the history of oil.

The cost of the project is estimated at KD 18 million and will be built on an area of 60,000 square meters.
KOC recently organized the 3rd IT Exhibition in a tent that was constructed near the Unity Center in Ahmadi. The event, which aims to highlight and showcase some of the newest and most advanced Information Technology systems that are used by KOC, was the third of its kind that was hosted by the Company. The exhibition was inaugurated by Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij Al-Sabah.

During the exhibition, Corporate Information Technology Group Manager Hesham Al-Nouri welcomed the Ahmadi Governor and senior KOC figures who were present for the event’s inauguration. In a break with traditional methods for delivering opening speeches, KOC Chairman and Managing Director Sami Al-Rushaid delivered his welcome address through a specially prepared holographic method that was well-received by the audience.

In his opening statement, the KOC Chairman welcomed everyone to the opening of the IT Exhibition. He reminded the audience that KOC has a long history of leadership in terms of adopting new technologies, and that this was also very true in terms of the adoption of Information Technology which he said has the great potential to improve efficiency and enhance productivity. “As a technology pioneer in the State of Kuwait,” he said, “KOC has been proud to demonstrate leadership by using the latest technologies to derive the maximum benefits from our investments in oil and gas.”

The Chairman went on to say that during the event, KOC will demonstrate how the adoption of state-of-the-art information technologies can be a major pillar of business excellence. He maintained that the three-day exhibition will provide information to the audience that will help them learn more about the current and strategic initiatives which include Green IT, Mobile Computing, Social Collaboration, Cloud Computing and many other cutting-edge technologies.

In a statement he delivered during the inauguration of the exhibition, Ahmadi Governor Sheikh Dr. Ibrahim Al-Duaij Al-Sabah said that “KOC strives to adopt the latest technologies in the documentation and the enhancement of communication between its sites and the leadership.” He also asserted that the technologies available at the exhibition were a source of inspiration and pride for all KOC employees.
Within the same context, Manager of Corporate Information Technology Group Hisham Al-Nouri said that the operational budget of the IT Group was about KD 14 million per year to help achieve its IT projects, and that the Group was eager to implement the latest technologies in order to protect KOC data from any type of cyber attack.

During the exhibition, KOC employees were provided with the opportunity to learn more about the various types of IT initiatives that the Company has been engaged in. Exhibitors included representatives from international companies such as IBM, CISCO and Microsoft, whose products and services are used extensively throughout many facets of KOC’s day-to-day operations.

KOC employees were also provided with a wealth of information from other KOC employees who manned booths that contained information regarding KOC initiatives like K-Library and social networking features within KOC that allow employees to share presentations and other materials while talking to other employees in real-time. Other initiatives like efforts to reduce the amount of paper consumption at KOC by going paperless were presented.

**About Information Technology:**

Information Technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise. The term is commonly used as a synonym for computers and computer networks, but it also encompasses other information distribution technologies such as television and telephones. Several industries are associated with information technology, such as computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services.
Together We Care: A Joint HSE Campaign by E&PD and NK Directorate

KOC recently held the “Together We Care” campaign at the Al-Hashemi Ballroom of the Radisson Blu Hotel. The campaign, which was a collaborative effort that was organized by Exploration & Production Development and NK Directorate, highlighted some of the best practices that the two directorates have recently been engaged in. KOC C&MD Sami Al-Rushaid, DMD NK Hosnia Hashim, and DMD Exploration & Production Development Khalid Al-Sumaiti delivered opening remarks during the event.

In his opening address, Al-Rushaid reminded the audience that the various HSE campaigns that KOC holds are meant to enhance awareness and are held for the benefit of both oil sector employees and the public at large. He maintained that KOC must remain vigilant in its efforts towards creating and maintaining safe workplaces and environments, adding that this was especially challenging given the hazardous nature of the oil and gas industry. He added that it was important for new safety measures to be implemented through HSE and that KOC strategy is to maintain high industrial standards.

“As we all know, the oil industry consists of highly hazardous operations at every phase of its production and faces many challenges in ensuring safer operations. At KOC, we make every effort to ensure safer operations by implementing several HSE initiatives and programs while integrating them with operational procedures,” the KOC Chairman said, adding that since the establishment of KOC HSE Management in 2005, the company has experienced a new wave which can only be described as a culture of incident prevention.

The KOC C&MD maintained that the Company’s commitment to HSE was evident in the formulation of annual HSE KPIs for all KOC Assets and Directorates with the integration of operational KPIs. While implementing these initiatives, he said, “All KOC entities are encouraged to conduct HSE campaigns and awareness programs to share the best HSE practices across the Company. In fact, this year, we have taken yet another step by inviting our colleagues from K-Companies, academic and scientific institutions, the EPA, ministries and other government stakeholders to share our best practices.

Al-Rushaid concluded his speech by reminding the audience that KOC strategy was to maintain high industrial standards and continue its commitment to health, safety, and environmental performance in its operations while creating a work and business culture of HSE leadership practices.
Following the Chairman’s speech, DMD NK Hosnia Hashim addressed the audience and spoke about some of the challenges the North Kuwait Directorate was facing in terms of managing hazards that naturally arise when production goals and targets have increased.

“As most of you know, the NK Asset objective is to contribute 1 MMBOFD by 2016/17,” the DMD said. “This target represents a 50% increase from our 2012/13 accomplishments and will require extensive investment and high levels of activities to realize. Accordingly, massive investment is being made in drilling, facility expansion, flow lines, headers, power and remedial projects, several of which are currently ongoing. Each of these activities exposes our staff and indeed, the entire asset to a wide range of hazards and HSE challenges. Addressing these hazards and managing them effectively is of paramount interest to us and it requires everyone’s involvement and contribution.”

The DMD went on to say that KOC has a strong commitment to not only KOC employees to operate in a healthy, safe and environmentally friendly way, but that the Company also has an obligation to the State of Kuwait as a whole to excel in its business strategies while maintaining high HSE standards so that Kuwait’s resources were protected for the longer term.

In her speech to the audience, the DMD shared a number of key HSE achievements that the North Kuwait Directorate has accomplished in 2012/13, which include the following:

1. NKD flaring has been continually reduced and a rate of .99% flaring was able to be achieved during 2012-13 from 2.88% in 2009.
2. Achieving “Zero Effluent Water Disposals to Pit” at GC-15 & GC-25. For GC-23, it has been reduced from 65,000 BBLs to 5,000 BBLs. By May, 2013, the entire North Kuwait Directorate will achieve Zero Effluent Water to Pits, which will be a very significant achievement.
3. Implemented Behavior-Based Safety Program which aims to improve KOC’s Safety Culture.
4. The downward trend in injury cases continued by achieving 10 Million Safe Man Hours without Lost Time Injury since May, 2011, being one of the strongest performances recorded so far.

DMD NK Hosnia Hashim upheld Company efforts to improve its HSE record and said that she was proud of KOC’s accomplishments, including the recent attainment of the RoSPA Gold Achievement Award. “These successes,” she said, “demonstrate that sustainability and HSE activities are very much a part of KOC’s day-to-day business. Our commitment towards sustainable practice will continue to drive KOC’s progress while also aiding in our nation’s development.

To conclude her speech, Hosnia Hashim thanked the guests and dignitaries for attending the campaign, the KOC Medical Group for its valuable contributions, KEPA, KISR, PAAF, Kuwait University and various NGO’s who have worked with KOC, and the Company’s business partners.

Following the DMD NK’s address to the audience, DMD (E&P) Khalid Al-Sumaiti took the stage and told the audience that it was his pleasure to host a joint HSE Campaign in collaboration with the North Kuwait Directorate.

In his address to the audience, Al-Sumaiti said that the prime objective of the event was to demonstrate commitment towards HSE by implementing the best HSE practices in E&P and NK Directorates and to share with or encourage other K-Companies to explore the possibilities of adopting these best practices.
“Our strategy at KOC made clear that leadership from the top in HSE is fundamental. Unless the leaders of the business say - and do - the right things and create a culture in their organization where HSE is an integral part of doing business well, it simply won’t happen,” the DMD said, adding that leadership in this field regarding visits and safety workshops resulted in significantly better HSE performance.

Al-Sumaiti also reminded the audience that exploration and drilling teams the world over have degrees of risk that are five times higher than production and construction activities. “We recognize that we will always face risks and challenges in our business, and we strongly feel it is the responsibility of leadership to build up the competency of our employees and contractors to uphold our standards in order to provide a safe and healthy environment for themselves and their colleagues, and to reduce our impact on the environment. HSE performance can only be excelled by effective and positive team work,” the DMD said.

Despite making a succession of steady improvements in regard to fatalities, injuries, and work-related illnesses, Al-Sumaiti maintained that there was “still a long way to go” and that “many opportunities to improve” existed. He also added that it was imperative for everyone within KOC and throughout K-Companies to take the opportunity to learn from others, which was indeed a focal point of this campaign. “The lessons to be learned are too important for us all to learn for ourselves the hard way. We have a moral obligation to share our knowledge and save lives. We believe collaborating with business partners is a critical component in achieving incident free operations and providing a healthy work environment,” Al-Sumaiti said.

The DMD then thanked E&PD and NK Directorate employees and contractors for their commitment to HSE excellence. He also thanked the exhibitors for their HSE initiatives towards the sustainable development of the oil sector and Kuwait.

During the event, Hamad Al-Kandari, Team Leader HSE (E&PD), delivered a presentation which covered a number of HSE initiatives that have been conducted by the directorate. These initiatives included HSE Workshops, scheduled and unscheduled site visits by management, enhanced levels of communication within the team and with contractors, HSE monitoring at E&PD facilities, and a range of other initiatives that have resulted in identifying and rectifying unsound practices.

In his presentation, Al-Kandari also shed light on a very important initiative, the E&PD Smart Alert System (SAS), which is an incident reporting and emergency vehicle (Ambulance, Fire Trucks) dispatch system based on GPRS, SMS and GPS protocol using GIS map-enabled tablet PCs.

As part of the “Together We Care” campaign, three contractors were awarded by the Exploration & Production Directorate, which developed a set of criteria to select three of the best contractors. The three contractors that were awarded included Nabors Drilling International, UPDC, and Western Geco.

After the presentations were delivered, a parallel exhibition was opened which contained information about some of the companies that KOC collaborates with.

In addition to the presentations and exhibition, a Blood Donation Campaign was held where KOC employees and attendants were encouraged to donate blood.
KOC recently organized a special ceremony to honor its long-serving employees.

In a speech he delivered on the occasion, KOC C&MD Sami Al-Rushaid said that while KOC organizes many celebrations throughout the year, some of these events stand out in particular because of the unique and meaningful aspects they represent. In addition, these events provide an excellent opportunity for lessons to be learned for the benefit of all.

“Honoring these employees,” Al-Rushaid said, “is essentially honoring the graceful values they contributed to engrave the concepts among their colleagues, as well as honoring the good examples, for they represent a model to guide the steps of the youth who join the Company and take advantage of their experiences and expertise to continue the march towards distinction and success.”

Meanwhile, Manager of the Information Technology Group, Hisham Al-Nouri, said the following in a speech he delivered on behalf of the honored employees: “I’m hereby speaking for those dear colleagues, men and women who spent, in this deep-rooted company, long years representing the most productive periods of their lives to contribute efforts and sacrifices to its development and progress.”

Al-Nouri maintained that “KOC was never buildings, oil fields, work sites, or offices and figures only, but it has always been and will forever remain a journey of life and memories deeply and forever engraved in our conscience, motivating us to exert the utmost of our efforts for the good and benefit of our Company and our dear and precious homeland.”
The Society of Petroleum Engineers recently held a technical workshop and conference in the Dorra Ballroom of the Kuwait Hilton Resort and Hotel in Mangaf. SPE, which is a non-profit professional association, is an institution which promotes energy resources development and production. The title of this particular SPE event was “Production Optimization Challenges” and featured a number of speakers from the oil and gas industry who shared their expertise and technical experiences in their respective fields.

The Production Optimization Challenges event was inaugurated by KOC Deputy Managing Director, North Kuwait, Hosnia Hashim. During her opening remarks, the DMD welcomed the international guests and speakers to Kuwait. She also upheld the importance of the work that SPE was engaged in for the benefit of everyone involved in the oil and gas industry.

KOC DMD Hosnia Hashim also maintained that the subject matter of the conference was especially relevant at this point in time and that SPE was a key resource for technical knowledge related to the oil and gas exploration and production industry. She added that SPE provides invaluable material through its publications, conferences, workshops, forums, and member-service programs.

Across the oil and gas industry, the production domain covers a wide range of important activities. These activities play a key role in the identification of opportunities for incremental production and/or improving production conditions of the well or reservoir system; activities targeting these objectives are usually understood and referred to collectively as Production Optimization, although many other topics as well, could be part of this portfolio.

In view of the wide spectrum of activities related to Production Optimization – ranging from fluids flow at reservoir level to wellbore production hydraulics up to barrels flowing to the tank – a corresponding number of challenges of varying types are faced during the whole production process and life cycle of the well.

In addition, as the oil and gas industry has grown and evolved, so have the challenges associated with production from complex systems such as horizontal wells, multilateral wells, advanced and smart completions and more have increased commensurately. These have become a common part of the Production Optimization portfolio of practically all assets today, thereby warranting a renewed focus on the subject of Production Optimization.

Information presented during this workshop brought to the fore the current approaches, innovative methodologies, efficient workflows and top class technologies being used today across the industry to overcome the key challenges in Production Optimization processes. Presentations, discussions and breakout sessions were designed and put in place to address the general challenges related to Production Optimization in the Middle East, while giving options to share and evaluate lessons learnt, best practices and case studies on specific related topics.

During the first session of the event, KOC Production Operations Team Leader Bader Abdul Rahman spoke to the audience about a range of issues at KOC, including how the Company was managing change and how KOC was implementing various practices to adapt its operations to suit maturing reservoirs. Abdul Rahman also spoke about how the Company continuously exerts efforts to ensure that the skills and resources of all KOC employees are current, up-to-date and in line with the requirements that are required of them. In his presentation, the Team Leader also upheld the importance of clear organizational setups, the important role that technology plays, and the need to be proactive at all levels and the important role that clear accountability can have on production.

The second keynote speaker during the first session was Dr. Fawzi Guehria from Schlumberger, who is
a Field Management Advisor. Dr. Guehria’s 34-year career included asset management of oil and gas fields in the US and overseas as well as research and development in reservoir studies. He holds a BS, MS, and Phd. in petroleum engineering. Dr. Guehria presently acts as advisor for multiple projects worldwide, namely the development of newly discovered unconventional gas in North Africa as well as the Intelligent Digital Oilfield Technology in Kuwait, or KwIDF.

During his presentation Dr. Guehria maintained that it is known that producing fields require day-to-day management for optimum production through usage of expertise and adapted technology. The high uncertainties stemming from geological complexities and operational risks do not leave much room for hazardous interventions or mere reactions to issues such as loss of well productivity or field production decline. This, he maintained, requires an integrated approach where the conceptual and analysis part is intimately tied to the execution and or evaluation and other operational and cost restraints.

**Optimization – Business Case:**

The second session of the event was titled “Optimization – Business Case.” Optimization is often discussed within the realms of technical adjustment to achieve certain set targets, and generally not taking into consideration the overall business case, which is underpinned by economic outcomes. As a result, “technical optimization” is in many cases separated from “economic optimization” – a situation that frequently results in a technically sound outcome not moving forward, because its overall quantification has not been framed within a business case. It is in view of this therefore, that this session sought to delve into the case to be made for always underpinning optimization question with an advocacy of the relevant business framework. How should such business cases be framed and what recommended approaches can be put forward to consistently define the business case for each optimization question we may be confronted in the oil and gas industry were questions that were answered during this session.

The first speaker during the second session was Francis Clayton, who has worked for Shell for more than 30 years primarily as a Production Technologist. He has degrees in Physics and Business Administration and is certified as a professional engineer. Clayton is currently working with KOC under a Shell-KOC Enhanced Technical Services Agreement and is responsible for implementing Well Integrity and Well and Reservoir management processes.

During his presentation, Clayton discussed production optimization as the business of maximizing the value of our producing assets and involved activities that increase production, increase recovery and reduce costs. As the benefits are often seen in accelerated production, greater care has to be taken with assessing economic benefit compared with new developments where, particularly in a high oil price world, the economics are often very clear. Optimization also requires a different mindset as it occurs over the operating stage of the field lifecycle, a period of perhaps 50 years compared with the shorter 5-10 years of the appraisal and development stage. Success in production optimization requires a methodological approach that must be built into a company’s structure and work processes. Clayton’s presentation showed how such an approach with examples of the benefits that have been realized in many cases.

**Heavy Oil / Unconventional Production Techniques:**

The third session of the event was titled “Heavy Oil / Unconventional Production Techniques,” which the session chairperson described as follows: When looking at the ever-growing hydrocarbons demand versus production over the last few decades, we see the shrinking spare capacity over time. We have gotten used to looking at population and economic growth as drivers for this demand, we accept that “easy oil” has come to an end and we also realize that “Brownfield redevelopment plays” will have a stronger contribution in the future. Statistically, the production of a field allows for 35 to 40% recoveries out of the OOIP during a field production life cycle. At this stage, aging assets, also know and brownfields, are still containing more than half of their hydrocarbons potential. All industry players share this challenge. Since the introduction of horizontal drilling and multi-lateral wells, through sub-surface studies, intelligent completions and extended production tests, etc., our understanding of how to access once called inaccessible or hidden reserves has allowed us to extract more hydrocarbons. This session addressed the Brownfield redevelopment, and the topics covered integrated reservoir downhole technologies including horizontal drilling and multi-laterals, well placement, optimized completion systems, selective perforations, well testing and production optimization techniques.

The third session included presentations by Erik Sellman, Cameron Process Systems, Eissa Al-Safran, Kuwait University,
and Andrew Dennant, Emerson, the first speaker, discussed the issue of improved dehydration of heavy crude oil with advanced electrostatic process. He maintained that the dehydration efficiency of heavy oils for both treaters and desalters can be reduced by several physical parameters, including the crude oil conductivity, solids content, Napthenates, viscosity, water salinity and solubility. He also maintained that newer electrostatic methods have improved the dehydration and desalting of heavy oils by increasing the electrostatic field strength and improving the vessel hydraulics. Efficient vessel hydraulics is essential to achieving maximum dehydration performance. Not only is the oil distribution critical but also the crude oil collection is equally important to maintaining effective performance. A new distributor, he said, can increase the vessel utilization from a low 50% up to 95%.

The second speaker, Eissa Al-Safran, is an Associate Professor of Petroleum Engineering and the Vice Dean for Research and Academic Affairs at the College of Engineering and Petroleum at Kuwait University. He was also the founder and director of Kuwait University Production Research Center (KUPRC). Al-Safran holds a Phd. in Petroleum Engineering and worked for KOC as a reservoir engineer from 1995 to 1997 and was a consultant for KOC Research and Technology Group from 2007 to 2012.

During his talk, Al-Safran discussed how multiphase flow technology is important for the efficient, safe and economical transportation of hydrocarbon mixture in wellbore and pipelines. Heavy oil production and transportation introduces several flow assurance issues due to the nature of the produced fluids and the heavy oil recovery techniques. The flow of very high viscosity oils may impair the economic deliverability of wells due to complex and poorly-understood flow characteristics and inaccurate predictions using existing two-phase flow models. In addition, heavy oil, gas, water separation presents a serious challenge due to high retention time required for efficient separation, which requires significantly large vessels with high costs and large footprints. Therefore, new separation methods and technologies are required for efficient separation and further processing. Al-Safran’s presentation introduced the topic of heavy oil multiphase flow in pipes and separation and presented the challenges faced by the oil industry today. In addition, the presentation aimed to shed light on possible solutions for current field issues and future field challenges in heavy oil multiphase flows in production systems.

**Brownfield Redevelopment and Well Stimulation:**

In the fourth session, which was titled “Brownfield Redevelopment and Well Stimulation,” speakers discussed how heavy crude oil provides particular challenges for the oil and gas industry, both in the extraction phase as well as in the processing and dehydration phase. Production analysis show that the world average crude oil API gravity is dropping every year and the majority of the long term known reserves are for heavy crude oil.

Speakers during this session maintained that the particular challenges of heavy crude oil include high oil density and low gas/oil ration, high crude oil viscosity and transportation issues, increased solids content, low density difference between crude oil and formation water, high crude oil conductivity, increased crude oil emulsion stability, low FWKO separation efficiency, less efficient instrumentation.

The tradition remedy to the aforementioned challenges often leads to high operating temperatures, large dosages of demulsifier chemicals, equipment fouling, production upsets, and use of very large treaters. This leads to both higher operating expenditure (OPEX) as well as higher capital expenditure (CAPEX).

**Intelligent Fields – Challenges:**

The fifth and final session included three speakers, two of whom are from KOC. The session, titled “Intelligent Fields – Challenges,” sought to explain production optimization as the maximization of value from hydrocarbon assets which is mainly achieved by improving both recovery and flow rates from wells. A key technique for this is well stimulation which involved treating the near wellbore region of the reservoir in order to reduce formation damage or increase the inflow area. In some cases, such as shale gas development, it is not possible to economically produce any hydrocarbons without stimulating the well. There
are many methods of well stimulation which can be applied in both sandstone and carbonate reservoirs. Primary stimulation methods include matrix acidizing in which treatment fluids flow through the pores spaces removing damage and fracture stimulation treatments in which the formation breakdown gradient is exceeded and large fractures created that significantly increase the inflow area. Other more exotic stimulation methods are also available using, for example, high energy sound waves, explosives and heat.

Bader Al-Matar, the Ag. Team Leader for Research & Technology Subsurface, Research & Technology Subsurface Team at KOC was the first speaker during the fifth session. Al-Matar, who has worked for KOC for almost 15 years, is currently working with the Research and Technology Group and has introduced a number of successful technologies to KOC.

During his presentation, Al-Matar discussed waterflood optimization using an ensemble based method. Al-Matar maintained that numerical waterflood optimization is applied to two representative sector models of the main producing reservoir of the Minagish Field located in Southwest Kuwait. Although the reservoir is mature, it is still under active development as there is still a large potential for oil production. To sweep the oil and to maintain pressure, injectors are placed in a peripheral configuration around the producers. A major challenge is to work out an injection and production strategy that optimizes the long term reservoir performance. As reservoir performance indicator the Net Present Value (NPV) was chosen, penalizing water injection and production. The operation of conventional wells have been optimized and the resulting reservoir performance is compared to a reference with a reactive control strategy, that is, closing a producer if its producing liquid stream is no longer profitable. Furthermore, the added value of smart wells have been investigated by applying well completions with multiple ICVs of which the settings, represented by values between 0 (fully closed) and 1 (fully open), are optimized.

The other speaker from KOC to present to the audience was Abrar Hajjeyah, who is a Petroleum Engineer I from the Field Development Gas Team. During her presentation, Hajjeyah maintained that optimization, timely decisions, and safety were key requirements for achieving KOC’s gas production targets. In 2009, KOC launched the Kuwait Integrated Digital Field Jurassic (KwIDF-Jurassic) project together with SIS as a cross-domain solution.

Of significance is that for the first time in Kuwait, KOC has achieved objectives that include design and installation of every component of a digital oilfield solution. Surface instrumentation (SCADA System), comprehensive infrastructure (communication and data), data management, intelligent workflows, function-relevant visualization, ergonomic collaboration, and change management were included. Furthermore, new Digital Field Work Processes, supported by sophisticated collaboration rooms, have been developed to enable proactive, real-time decisions to be made in accordance with the exploitation strategy defined for the field.

The intelligent workflows incorporate the requisite underlying production science to liberate engineers from tedious manual data preparation, redirecting their focus to optimization analytics. In effect, by applying petrochemical know-how, cross domain experience, and scientific principles, KwIDF Jurassic is automating the evolution of data to knowledge, thereby enabling a new standard of asset awareness not previously achieved with other solutions.

The resulting collaborative work ties together work processes from different teams such as Production Support, Field Development, and the facilities operator. KwIDF Jurassic thus unifies KOC’s technical resources, achieving a new level of decision-making behaviors and cooperation. For example, the subsurface team can now also make real-time contributions to Production Operations as opposed to being limited to only the traditional non-operational role of studies and reviews.

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**About Society of Petroleum Engineers**

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose members are engaged in energy resources development and production. SPE serves more than 104,000 members in 123 countries worldwide. SPE is a key resource for technical knowledge related to the oil and gas exploration and production industry and provides services through its publications, events, training courses, and online resources at www.spe.org.
Maintaining ‘U’ and ‘L’ Shaped Drain Segments

The uncontrolled and unplanned release of toxic crude into the environment is every oil company’s worst nightmare. Oil spills have the potential to greatly damage the surrounding environment, sometimes beyond repair. These catastrophic events not only cause harm to the environment, but also inflict financial damage on oil companies while negatively impacting their reputations as reliable providers of energy.

Infrequently used drain segments

When ‘U’ and ‘L’ shaped drain segments are not used very often, two hazardous situations can arise: deposit corrosion and sludge accumulation.

Main carrier Pipeline

“U” shaped drain segment

“L” shaped drain segment

Article submitted by Mohammad Al-Rashidi, Mohammad Wehayda and Amir Badawi
Export Operations Engineers

Export Operations Team
Oil spill from tank 64 filling line

On November 10, 2007 at 10:50 am, the shift supervisor at Crude Oil Control Centre (C OCC) received a call that crude oil was overflowing from a pit located outside the Tank 64 bund wall at the STF. Oil was spreading and filling newly excavated trenches related to an adjacent project. The total quantity of spilled oil was calculated at 327 barrels. This filled the pit and adjacent trenches, and the total recovered quantity was 321 barrels. Corrective measures were taken by export operations and export maintenance and all the affected tanks were put back into service on November 15.

An investigation team was formed to launch a comprehensive study into the immediate and root causes of this incident. The team wanted to be able to provide recommendations on methods to mitigate the increased risk from these dead legs and eliminate such incidents’ future re-occurrence. The team found that the immediate cause of the spill was due to severe corrosion leading to the failure of an elbow joint attached to the 6” drain segment on the filling line located outside the tank bund wall.

Oil spill from gravity pipeline #1 (GL-1)

GL-1 had been undergoing draining activities in preparation for modifications that were planned on the line. The line had been presumed empty for three days until the day of the incident but could not be confirmed. On July 19, 2009 at 9:30 am the Export Maintenance on-site supervisor made an emergency call to KOC Burgan Fire station reporting oil overflowing from one of GL-1’s pits near Highway 40. Burgan Fire Station, in turn, informed all the concerned parties as per their call out list. Export operations implemented KOC general corrosion emergency procedure and acted accordingly.

The total quantity of spilled oil was calculated as 250 barrels and the total recovered quantity was 220 barrels. The immediate cause of the spill, as per the investigation team, was due to the method applied by the site supervisor to verify the line emptiness. After the 6” drain valve (connected to a dead leg) was opened and no oil came out, the site supervisor poked in a rod to clear any existing blockages in the drain segment. The oil under pressure (withheld by sludge) was immediately released and the site supervisor failed to close the drain valve leading to oil overflowing from the pit into the surrounding environment.

In Depth Analysis

Design criteria

As per ASME B31.3 (2010), the pressure thickness of a pipeline is determined in accordance with the following equation: Where ‘P’ is the internal design gage pressure, ‘D’ is the outside diameter of the pipeline, ‘S’ is the stress value of the pipe material, ‘E’ is a quality factor, ‘W’ is the weld joint reduction factor, ‘Y’ is a coefficient.

The required pipe thickness is then obtained by applying the next equation: Where ‘tm’ is the required thickness of the pipe being designed, ‘c’ is sum of the mechanical allowances (thread or groove depth) plus corrosion and erosion allowances, and ‘t’ is the pipe pressure thickness and should not be less than ‘tm’. For coefficient ‘C’ it should be noted that, for dead legs, there will be no erosion allowances, also there will be no mechanical allowances as there are no grooved or threaded connections, so this coefficient shall only accommodate for corrosion allowance.

As a normal practice in KOC, this allowance (for all pipelines designed under ASME B31.4 and piping systems designed under ASME B31.3) is usually put as 3.12mm and does not allow for accelerated corrosion due to stagnation in the dead portions of a pipeline or piping system, specifically low points as the drain segments.

Immediate causes

Deposit corrosion: Deadlegs are becoming increasingly unfavorable due to their responsibility for many uncontrollable hydrocarbon release incidents in KOC export operations’ facilities. Accumulated deposits create conditions favorable to extremely destructive microbiologically influenced corrosion – so-called deposit corrosion – associated with
stagnant areas with the intrusion of foreign materials.

KOC came across many situations where hydrocarbon release incidents occurred due to accelerated excessive internal corrosion on the walls of the dead legs. The root cause of such acceleration is the accumulation of trapped corroding materials referred to as 'stagnant oily water’ on the internal walls of the dead legs.

But how are these dead legs responsible for that hazard? Export Operations teams discovered that there were two immediate causes to this. The first immediate cause is the perforation of the girth welds at the 6 o’clock position. The perforation (corrosion) was caused by water separation from crude at the dead legs. The perforation was then accelerated by the imperfections in welds (deep incomplete penetration effect). The second immediate cause was wherever there was excessive material loss due to pitting corrosion (in some cases 45-65% reduction in original pipe/elbow thickness), which rendered the drain pipe segment completely unreliable. Even if it were not leaking at the time of the inspection, a leak may occur should the location of the heavy corrosion coincide with external corrosion, excessive loads or when there is a pipe surge due to bad operations. Both immediate causes of deposit corrosion will eventually lead to the failure of the drain segment.

Sludge formation

A second hazardous situation arises from the accumulation of sludge in these dead legs, especially at the elbow portion. Sludge is usually formed from the settlement of the suspended waxes in the crude into any ‘low point’, either at a natural rate or accelerated due to pigging operations. This traps large quantities of crude oil (maybe even under pressure) upstream of the settle point, which in turn provides false indication to the operations or maintenance onsite personnel that the line has been completely drained and is empty. The immediate cause of an oil spill and discharge into the environment would be one of the following two reasons:

• The sudden collapse of the sludge blockade withholding the crude oil when verifying the line emptiness by the onsite personnel.

• False indication that the line is empty when attempting to carry out any modifications like cold cutting.

Root causes

1. Standing operational instructions that were not updated to incorporate the lack of use of these drain segments.

Current KOC operations and external market obligations require the heavy, nonstop use of the main carrier pipelines to which the dead legs are attached to. In other words, the drain segments would only be ‘flushed’ during the highly infrequent and uncommon complete draining of these lines, like an emergency situation where it would be crucial to completely drain the main pipeline through these drain segments. Furthermore, it would have been highly unfeasible to enforce a routine flushing schedule for these dead legs. In KOC export operations’ area alone, there is an estimated quantity of 150 ‘U’ and ‘L’ shaped drain segments so the routine flushing would require a dedicated large workforce with a considerable quantity of vacuum tankers and a fully dedicated
oil recovery unit. The unfeasibility of implementing periodical flushing of these drain segments and updating the standing operational instructions to reflect this schedule meant that these segments would be left unused for a prolonged period of time.

2. Initial design that did not anticipate excessive or accelerated perforations and material loss in the drain segment as well as sludge formation.

Initial design as shown above did not account for the infrequent use of these drain segments and its consequences. Although the design itself is correct, it can be argued that it was inapplicable or not useful to our operations requirements. In reality it increased the risk factor associated with the normal risk accompanying hydrocarbons’ handling activities.

3. Human error by lack of competency of onsite supervisor leading to wrong decisions, overconfidence, or neglecting to adhere to operational standing instruction manuals and industry’s recommended practices.

As was mentioned in the oil spill in July 2009, the onsite maintenance personnel, out of lack of experience and against the operations’ instructions on the work permit, poked a rod into a sludge barrier on one of the blocked, presumed empty, ‘L’ drain segments when he was inside the pit. After opening the drain valve, the sudden collapse of sludge barrier and the gush of crude frightened the worker and he immediately left the pit failing to close the drain valve.

Recommended Mitigating Procedures

- **Launch an inspection program to predict potential failure and carry out repair works in advance, using welding.**

  This recommendation is in line with API 570 Para. 5.4.2: ‘Each owner/user shall provide specific attention to the need for inspection of piping systems that are susceptible to the following specific types and areas of deterioration: and clause (b) specifically mentioned ‘dead legs’. But this recommendation was later rejected as many of the drain segments had no existing pits. Eventually all the drain segments would need to be either cancelled or redesigned so it would not be feasible to construct the pits for the sole purpose of inspection only, which leads to the following recommendation.

- **Apply corrosion protective coating to the drain segments internally.**

  This recommendation shall not mitigate the risk of sludge settlement and formation; rather it would only mitigate the increased risk from deposit corrosion.

- **Fill the drain segments with corrosion inhibiting liquid of specific gravity higher than salty water.**

  This recommendation shall not counter the effect of sludge settlement as sludge is of higher specific gravity than most liquids; this recommendation would only mitigate the increased risk from deposit corrosion.

- **Provide the drain segments with a ½” water drain plug at the lowest position.**

  This recommendation shall not counter the effect of sludge settlement as the sludge would most likely not pass through the smaller water drain valve; this recommendation would only mitigate the increased risk from deposit corrosion. Furthermore, it shall generate a problem with the feasibility, specifically the dedication of a team to carry out the job of continuously flushing these drain segments.

- **Cancel or redesign the drain segments.**

  KOC Export Operations Team, with the help and support from Export Maintenance Team, chose to implement this recommendation as shown below in the next two clauses: The redesign was executed by changing the drain orientation from the 6 o’clock position to the 12 o’clock position on the existing pipeline, thus eliminating the possibility of any settlement of oily water or sludge accumulation in the dead leg. The new orientation could also still act as a drain point and there is an added advantage that it can serve as an oil level indicator inside the pipe when attempting to completely drain the pipeline.

  Where it was deemed that the drain segment was not required, Export Operations opted to cancel them by cold cutting the existing drain segment and welding on a flange and installing a blind flange, the formation of sludge in this case carried no added risk to the operation and the oily water settlement was minimized by keeping the vertical portion of the remaining drain segment at a maximum length of 30 cm.

It should be noted that the design standards and governing bodies do not segregate between the dead legs and the pipelines to which they are connected to in the design stage in terms of material thickness. The dead legs drain segments issue and their consequences should be tackled proactively at the early stages of design by being initially designed in the 12 o’clock position and kept to a minimum. Should they be designed at the conventional six o’clock position, then the governing design standards should accommodate for the accelerated corrosion rate of these dead legs by increasing the corrosion allowance thickness.
Abstract

Currently at Kuwait Oil Company, hundreds of wells are being converted into Artificial Lifted (A/L) ones every year, for which an A/L method selection evaluation is performed to find the most suitable one on every single well. All A/L methods currently available at KOC are taken into account for this evaluation which requires Time and a Good Expertise on different systems and also conduct economical evaluation analysis to make the right choice. For this purpose, an In-House-Made Artificial Lift Expert System (ALES) was developed which aims to find the most suitable method and analyze future well performance with very simple steps.

ALES is able to do the nodal analysis, tubing modeling, artificial lift systems performance evaluation, power consumption calculations and economical evaluation avoiding rules of thumb, generalizations and assumptions. All these analysis feed the built-in expert system which will guide the user to the best choice. Some warnings, suggestions and observations are also displayed for each A/L Method, offering the user more inputs for its selection.

Introduction

Electrical Submersible Pumps are the artificial lift (A/L) system most commonly applied in Kuwait Oil Company (KOC) during the last 30 years. However, changes related to reservoir conditions have forced the company to diversify the A/L methods for the oil wells. Lately, Progressive Cavity Pumps (PCP), Gas Lift and Sucker Rod Pumps (SRP) have been in implemented successfully in the oil fields, for which new contracts has been signed to supply PCPs and SRPs when they are required. Since different A/L modes are now available, the proper artificial lift selection has to be performed for each individual well in order to find the most suitable system in terms of reliability, performance, power consumption and costs.

In addition to the above, the total count of artificial lifted wells per year in KOC is growing exponentially. Only during the next 5 years it is expected to install more than 1100 A/L system on new drilled and currently naturally flowing wells. Each well requires an individual analysis to identify the most optimum method which, added to the daily work load on the Engineers that do the same evaluation for the existing artificial lifted wells to decide the best A/L system after failure, represents a high work load that would require more man power and A/L experts or consultants.

Tables of typical application of artificial lift methods (Figure 1) are very well known and widely used worldwide. Engineers usually use them to have an idea of the A/L mode to be selected for a given condition, however, this tables are not accurate and do not guarantee that whatever passes the screening will be totally capable to be applied.

As per all the above, Well Surveillance Group in KOC proposed to define a strategy to approach this new scenario in the company. This plan had to be characterized by Accurate, Assertive, Knowledge transferring, complementary training and time saving. Given this, a unique solution came up that involves an in-house development on an Artificial Lift Expert System (ALES) which is what this paper is about.

A typical situation when a consultant is asked about the A/L method to be used is the tendency to choose the one he/she feels more comfortable with, besides the selection criteria or justification is not always the same. In consequence an expert for each method may be consulted to have an impartial artificial lift selection process. However, not always is possible to have the opinion of different experts when analyzing many wells especially in those emergency cases such as: an unexpected failure, additional extra budget, rig rescheduling, etc. By using an expert system based in technical quantitative rules there is no preference for any method and the criteria is going to be the same for all of them. Clearly the expert system’s evaluation rules for each method must agree with the world wide accepted criteria or equations and be as complex as required in order to obtain unbiased results. There are previous successful experiences in the world of expert systems for artificial lift selection; however, they are proprietary systems (rules are secret) and most of them are not commercial software which makes them not attractive or useless. Besides, sometimes particular rules apply and must be considered for a specific case in one country or company because of the contractual, logistic or environmental reasons.

Of course, Experts systems for artificial lift selection requires revision and actualization of the rules as the technology improves and expand the limits and
the application window and should be used carefully by trained Engineer. The expert system does not replace the expert but does aid the engineer in the decision and speed up the selection process and minimize the dependence on A/L consultants.

ALES Concept and Development

An Expert System is a software that uses a knowledge base of human expertise for problem solving, or to clarify uncertainties where normally one or more human experts would need to be consulted [Wikipedia]. The main challenges that comes up from this concept are basically how the knowledge of the experts will be coded, how the system will use this human expertise database to talk and advise about an specific case and what inputs and calculations will feed the expert system.

It was decided that the Expert System must be fed with real well parameters and outputs from internal calculations as if the design of each Artificial Lift Method is performed at the same time, regardless of the capability of a specific method to operate under the given well conditions. By this way, all limitations, critical conditions and variables that affect the performance will be calculated and sent to the expert module.

Usually, most of the required parameters to design and select an A/L System are available. The first thing an expert would do with this information is to asses and questioning each A/L system performing under the given conditions. As an example, the expert may ask him/herself: Can a SRP produce 10000 BPD at 10000 feet? An Engineer with some expertise in this method may know that it will be difficult, thus he or she might start thinking about finding a different solution for this specific well. This approach reflects that there is a pre-assessment made by the expert based on his/her experience only, without executing any calculation and this is meant to be one of the first functionalities of ALES.

Considering the same case mentioned in the above paragraph, this Engineer may consider an ESP System as a good option, however, at this stage there are other parameters that affects the ESP performance that need to be calculated such as the fraction of free gas into pump for the desired production rate. If this value is two high, the expert may start thinking about a different solution like Gas Lift for example. In this sense, it is evident that some design calculations must be executed to have a better picture of each A/L system performance.

Assuming that the free gas into pump is acceptable and theoretically an ESP can do this Job for the above case, still it is necessary to calculate all stresses, torques and pressures under which this pump will operate and determine if a pump capable to operate under these conditions is manufactured and available in the market. After doing all of this for each Artificial Lift System, the Engineer will be totally capable to make the right and most assertive decision.

Typically, to execute all the analysis mentioned before may take long time and might require more than one expert, thus ALES had to be designed to function in such a way that evaluating one case should take less than 5 minutes.

In ALES, when a parameter is being evaluated, there are a quantitative complex rules whose output values goes from -1 (bad ) to +1 (excellent) . Figure 2 shows and example for production rates evaluation when using an ESP (at 50 hertz) for two different casings sizes (Red line the 5 ½” casing and green line 7”casing). As can be appreciated for rates below 500 BPD the corresponding rule in ALES gives a negative value because a typical ESP is going to operate below the recommended range (down-thrust) which reduces the run life, besides it is expected to have low ESP efficiencies for small pumps and the corresponding shafts are fragile. Then for rates from 500 to 1300 BPD the value is positive but lower than +1 because the pumps are close to the minimum (downthrust limit) recommended rate. For rates up to 3200 BPD for both casings is the same and then the rule decreases for 5 ½” casing because it is reaching 5000 BPD the maximum recommended limit until the maximum feasible limit of 5400 BPD. An equivalent situation happen for 7” casing but with higher rates because the pump capacities are higher for bigger pumps that fit inside 7” casing but they don’t in a 5 ½ “casing. To explain this rule a target rate of 4500 BPD is assumed. In this sense, if the well has a 5 ½ casing the evaluation will be +0.7 (good but not excellent) and for a 7” casing the evaluation will be +1 (excellent).
It must be highlighted that in the literature papers, tables of A/L systems typical application shows values such as SRP maximum rate: 4000 BPD, and maximum lift of 10.000 ft, where in reality it is impossible to produce 4000 BPD with 10.000 ft of lift (4300 psi differential pressure). What is real is 4000 BPD with 700 feet of lift in a 9 5/8” casing or 100 BPD with 10.000 ft of lift. In contrast, ALES’s rules are based in the physics of the system, especially for parameters that are related to each other. As example, the production rate and pressure requirements are related by the maximum power that the shaft can support (because of maximum stresses for a given pumping speed) as well as the maximum differential pressure that cracks the ESP housing (burst pressure). Since the power is equal to the production rate multiplied by the differential pressure then the maximum differential depends on the rate and shaft resistance. Figure 3 shows the maximum differential pressure as a function of the rate for 5 ½” and 7” casings, in both cases the higher the rate the lower the maximum ESP’s differential pressure capacity. Pumps for 7 inches casing (green line) have bigger shaft than pumps for 5 ½ casing (red line) and therefore a maximum HP can be handled but on the other hand they have lower burst pressure. As can be appreciated the green line is above the red line but suddenly cut at 6000 psi (burst pressure) then for rates lower than 1300 BPD both curve are the same, because ALES selects the smallest pump diameter since they fit in both 7” and 5 ½” casings and stand for more differential pressure for that rate. As example, when a target rate of 4000 BPD is being evaluated requiring 1800 psi of differential pressure (obtained by nodal analysis) for a 5 ½” casing the differential pressure is close to the limit of 1900 psi (representing a 95% of pressure load) but for the 7” casing is far for the limit of 4500 psi (representing 40% of pressure load). The differential pressure-rate rule is based in the percentage of load from this chart.

The previous paragraphs explain the way each parameter is analyzed, clearly for each artificial lift method the rules are going to change, besides the overall evaluation considers the quantitative analysis (-1 to +1) of each parameters with the rules together with the importance of weight of that parameter that also is different from method to method. The summation of the weights in each method has to be equal to 100 (figure 4 shows an example for calculations but not the real values in ALES). Assuming that a well will produce with 300 ppm of sand, the internal rules of ALES will give -1, 1 and 0.2 (not real values) for ESP, PCP and SRP respectively; however, the sand has a great importance in ESP, little for PCP and some for SRP, therefore the weights are 20%, 5% and 10% so for the sands score will be equal to -20, 5 and 2 points for each method respectively. The total overall performance score is the sum of the parameters score. Since the weight summation is 100, then the maximum score is 100 and the minimum is -100. (Absolute opposed to the operational window), however less than 50 points should be classified to medium and less than 20 not recommended. For the rules limits and weights, KOC experts and services companies were taken into consideration for having a tuned system. Also several test cases were run and the results agreed with expert’s opinion.

The above weights and rules are for reference only and may be very far from the ones used for the calculations.

Figure 3. ESP limits related to the relationship between downhole rate and differential pressure.

Figure 4. Example of weight of each A/L design parameter on the final assessment.

ALES Look, Functionalities and Results.
The current version of ALES contains a very simple interface that requires only two clicks to complete the process after entering all the required data. Figure 5 shows the first screen of the system. In it, all data related to the well/reservoir names and mechanical configuration are entered. There are also some drop-down lists that facilitate to the user the proper data selection, minimizing typing mistakes.

Figure 5. First screen view of ALES. Data Entry.
The second screen of ALES (Figure 6) is meant for entering reservoir & fluid parameters and to perform the Nodal Analysis. The system, shows warning messages when the well can flow naturally what is required to produce and when the desired production rate is greater than the absolute open flow. In this way the user can check the physical consistency or integrity of the data by matching the production (if any) with the production history in this well or neighbor wells and/or the operational conditions in the artificial lift methods existing in the field. This is a very important step since ALES rules are based on calculations rather than rules of thumb, meaning that inconsistent data will change the evaluation results.

All the above inputs and calculations will start feeding the built-in expert system from this point. High and low experienced users can access to it to support any decision. In terms of scores, the expert system advises about the most suitable method to be chosen, meaning that the one with the highest scores should be selected (refer to Figure 8). However, there are some warnings shown on the same screen view that explain why some specific method got lower score than another such as conditions close or exceeding the limits, high frictions, expected short run life and reliability, etc. This way, the user can understand the assessment of the expert module and at the same time learn and judge.

After entering all the data and performing the nodal analysis, the first pre-design calculations are made providing the user some outputs that become inputs for the A/L method selection and evaluating the requirements. The expected pump intake & discharge pressure, free gas into pump at the suggested setting depth, down hole rate, required horse power and other parameters are displayed as shown in Figure 7. Every single detail such as considering a rod string for SRP and PCP but not for ESP, higher gas separation efficiency in ESPs than PCP and SRP, Natural gas separation based on production rate, casing size, etc., among other details are taken into account for all the calculations.

On the same screen view, some minimum required mechanical conditions for each A/L method are displayed to show how they would perform if they operate under the given conditions. Load percentages, burst pressures, speeds (RPM, Hertz or SPM), pump pressure loads, rod stresses, torque, etc. are calculated and will support the decision and evaluation of an experienced user.

Additionally, the expert system module provides an economical evaluation as per the already existing contracts in KOC in this regards, which can be used by the user when he/she consider it necessary, especially when technically more than one A/L System are feasible.

It is important to highlight that all calculations and outputs have been compared to commercial Design/Nodal Analysis Software and the opinion of A/L experts, obtaining a high level of acceptance and excellent results. It has been also tested that when ALES says that an specific A/L system cannot be implemented under certain conditions, the same cannot be designed by any other commercial software for the same data and target and vice versa.
Conclusions

ALES is basically a computerized model that uses a knowledge base of human expertise along with the proper design calculations for each A/L system available in KOC, all-in-one, providing the all necessary inputs to make right decisions. This concept has let KOC expedite the A/L selection and pre-design evaluation for each well with the same manpower providing very high quality results, which makes this system highly reliable for the company.

In Summary, the following characteristics can be assigned to ALES:

- Accurate, since all widely used assumptions and rules of thumb have been reduced to the minimum expression.
- Time Saving due to all steps related to data analysis, A/L performance evaluation and method selection has been concentrated into three clicks only.
- Assertive, since ALES considers all necessary equations, limits and properties to emit the results, providing a complete picture to the users to make the right decision.
- Knowledge Transferring as result of the permanent availability of the experts in the KOC servers.
- Complementary Trainer as new Engineers can use it to identify how changes in some parameters can impact and affect the method selection and the A/L performance, obtaining at the same time the assessment of the experts by warnings, suggestions and observations.

Some new features will be added soon that will enhanced ALES capabilities such as TVD-MD corrections for horizontal/deviated wells, IPR for multilayers, IPR construction based on multirate tests, ESP design module, Gas Lift and Hydraulic Jet Pump pre-design and expert system modules. After all this improvements, it is expected ALES to be considered one of the most advanced petroleum engineering-related applications in KOC.

REFERENCES

DMD (NK) Capt. Ahmad Al-Rasheed recently commended the exceptional efforts exerted by GC-17 employees in joining hands for the recovery of oil resulting from upstream operations and spills.

Al-Rasheed voiced his pride with the success of young Kuwaiti staff in designing and implementing the different phases of recovering, gathering and transferring spilled oil, after purification, to export lines, therefore asserting their commitment to preserve the national wealth, consecrate their expertise into preventing spills and their active contribution to protect the environment from pollution.

Speaking before a gathering comprised of Group Managers, Omar Sadeq (Operations) - who undertook to explain the phases of work in GC-17, Hassan Bunain (Fields Development), Ismael Abdullah (Corporate Services) and the center’s staff on the occasion of its inauguration, Al-Rasheed maintained that “What has been achieved by those young people by their own efforts, without depending on whatever foreign expertise, was an extremely important achievement, a source of pride for the Company, and an example to be followed by its employees and future generations.”

On his side, Maintenance Supervisor (WK) Mahmoud Al-Sayyed explained that the work of the Oil Spill Recovery Unit encompasses three oil lakes, the depth of which could reach 10 meters, and has been equipped for gathering, warming and purifying spilled oil from roughly 1,000 wellheads scattered around the Directorate, before being dispatched to the Gathering Center.

He added that an average of 90,000 barrels of spilled oil were recovered every month and that work is under way to apply the best methods of coping with upstream operations and linking recovered oil to export lines.

Such operations are comprised of getting rid of impurities and mud residues created by drilling works and separating produced water and re-injecting it underground before sending oil to specialized installations for purification.
Japan says it has extracted gas from offshore deposits of methane hydrate - sometimes called "flammable ice" - as a breakthrough that officials say could be a step towards tapping a promising but still little-understood energy source.

The gas, whose extraction from the undersea hydrate reservoir is thought to be a world first, could provide an alternative source of energy to known oil and gas reserves. That could be crucial for Japan, which is the world's biggest importer of liquefied natural gas and is engaged in a public debate about whether to resume its heavy reliance on nuclear power.

Experts estimate the carbon found in gas hydrates worldwide totals at least twice the amount of carbon in all of the earth's other fossil fuels, making it a potential game-changer for energy-poor countries such as Japan. Researchers had already extracted gas from onshore methane hydrate reservoirs but not from beneath the seabed.

Methane is a greenhouse gas, and the exact properties of undersea hydrates and how they might affect the environment are poorly understood. Japan has invested hundreds of millions of dollars to explore offshore methane hydrate reserves in the Pacific and the Sea of Japan. That task has become all the more pressing after the Fukushima nuclear crisis, which has all but halted Japan's nuclear energy program and caused a sharp increase in fossil fuel imports. Japan's rising energy bill has weighed heavily on its economy, helping to push it to a trade deficit and reducing the benefits of a weaker yen to Japanese exporters.
The Japanese Ministry of Economy, Trade and Industry said a team aboard the scientific drilling ship Chikyu had started a trial extraction of gas from a layer of methane hydrates about 300 meters below the seabed on Tuesday. The ship has been drilling since January in an area of the Pacific about 1,000 meters deep, 80 kilometers south of the Atsumi Peninsula in central Japan.

The team drilled into and then lowered the pressure in the undersea methane hydrate reserve, causing the methane and ice to separate. It then piped the gas to the surface. Hours later, a flare on the ship's stern showed that gas was being produced.

"Japan could finally have an energy source to call its own," said Takami Kawamoto, a spokesman for the Japan Oil, Gas and Metals National Corp, or Jogmec, the state-run company leading the trial extraction.

The team will continue the trial extraction for about two weeks before analyzing how much gas has been produced. Japan hopes to make the technology commercially viable in about five years.

It is unclear to what extent tapping methane hydrate would affect Japan's emissions or global warming. On one hand, natural gas would provide a cleaner alternative to coal, which still provides Japan with a fifth of its primary energy needs. But new energy sources could also cause Japan to slow its development of renewable energies or green technologies, hurting its emissions in the long run. Any accidental release of large amounts of methane during the extraction process would also be harmful.

Jogmec estimates that the surrounding area in the Nankai submarine trough holds at least 1.1 trillion cubic meters of methane hydrate, enough to meet 11 years' worth of gas imports to Japan.

A rough estimate by the National Institute of Advanced Industrial Science and Technology has put the total amount of methane hydrate in the waters surrounding Japan at more than 7 trillion cubic meters, or what researchers have long said is closer to 100 years' worth of Japan's gas needs.

Methane hydrate is a sherbet-like substance that can form when methane gas is trapped in ice below the seabed or underground. Although it looks like ice, it burns when it is heated. Experts say there are abundant deposits of gas hydrates in the seabed and in some Arctic regions. Japan, together with Canada, has already succeeded in extracting gas from methane hydrate trapped in permafrost soil. US researchers are carrying out similar tests in Alaska.

The difficulty had long been how to extract gas from the methane hydrate far below the seabed. In onshore tests, Japan explored using hot water to warm the methane hydrate and tried lowering pressure to free the methane molecules. Japan decided to use depressurization, partly because pumping warm water under the seabed would itself require a lot of energy.
Kuwait Oil Company and the Society of Exploration Geophysicists recently co-hosted the first ever industry workshop around the single sensor theme. The workshop, which was held at the Regency Hotel in Kuwait, lasted three days and discussions focused on three main areas: case histories, current challenges and the most promising trends for the future.

Single sensor technology, which is now widely used, refers to recording and processing seismic data through the use of individual geophones (ground motion captors). Single sensor technology stands in contrast to the conventional approach of summing the signals recorded by a number of receivers electrically connected (arrays).

In preparation for the industry workshop, a technical committee was formed from ten experts representing six major companies; KOC, CGGVeritas, Aramco, BP, WesternGeco and ADNOC. KOC was represented by four members and the committee was led by Ahmad Jaber Al-Eidan, Manager, Exploration Group. The main duties of the committee were planning and design of the technical sessions, including the technical themes, selection of the key note speakers and evaluating and sorting the submitted technical papers.

The workshop activities were commenced with a pre-workshop site visit, where approximately 200 invitees and dignitaries were presented with information regarding the state of the art 2D single sensor survey in North Kuwait, where the WesternGeco crew that is operating in coordination with KOC uses 220,000 life channels, the highest ever used in the industry. The event in North Kuwait was inaugurated by KOC Chairman and Managing Director Sami Al-Rushaid. During the event, KOC Exploration Group employees presented their accumulated experience in 3D seismic acquisition and processing in view of the exploration challenges in terms of the unconventional depths, sizes, and potential traps found within the reservoirs in question.

In addition, the workshop served as a forum where 26 technical papers were presented and discussed at length. Four advanced technical papers were presented by KOC geoscientists, and the titles of these papers were:

1. What Is The Role Of Single Sensor And Broadband Technology In Exploration and Development?
2. Single-Sensor Technology: Story of Success from Kuwait
3. Scope For Improvement In Single Sensor Data Processing In Kuwait: An Interpreter’s View.
4. Near-Surface Characterization through Simultaneous Joint Inversion of Surface Waves and Refracted Waves.
The high quality of the papers presented by the KOC employees contributed to the improvement of KOC’s technical image, not only in the GCC area but also worldwide as well as proved by the leadership of KOC in using the single-sensor technology. In this regard, KOC is among the very first companies to test and adopt the single sensor methodology.

Over the last decade, advances in acquisition and processing such as broadband data acquisition and single sensor processing have opened a number of possibilities for the development of advanced applications throughout the full life cycle of a field. In this regard, the event became a platform for explaining, understanding, questioning and reviewing several case histories representing successes and limitations of the technology as well as some innovative approaches.

Following is a list of the main subjects discussed during the event:

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<th>Where does the value lie: Single-sensor system, low-frequency or both?</th>
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</thead>
<tbody>
<tr>
<td>How critical is the array response when one reduces the number of elements?</td>
</tr>
<tr>
<td>When is full single sensor processing required through the imaging workflow?</td>
</tr>
<tr>
<td>Should the spatial sampling be adequate for the signal or noise or both? How much can the new processing techniques relax the requirements?</td>
</tr>
<tr>
<td>What is the most effective methodology to compare conventional versus single-sensor data?</td>
</tr>
<tr>
<td>What is most important: Line spacing, point spacing or single-sensor density?</td>
</tr>
<tr>
<td>Is the solution high source density and less receiver density? Or vice versa?</td>
</tr>
<tr>
<td>Is it worth recording receiver domain and avoid sorting efforts in processing? Or is shot, OVT, etc. more effective?</td>
</tr>
<tr>
<td>What are the advances in processing for the future: Better algorithms, less costly and TAT?</td>
</tr>
<tr>
<td>Vibroseis techniques and continuous recording</td>
</tr>
<tr>
<td>Minimize acquisition footprint effects, improve spatial/vertical resolution and true amplitude preservation for deep imaging</td>
</tr>
<tr>
<td>PSDM is the way to go for imaging to exploit the value of single-sensor data</td>
</tr>
<tr>
<td>Survey design</td>
</tr>
<tr>
<td>Point source and point receiver is the way forward</td>
</tr>
<tr>
<td>High density and wide-azimuth processing is a challenge</td>
</tr>
<tr>
<td>Enhanced productivity methods are not recommended for amplitude preservation deliverables</td>
</tr>
<tr>
<td>The suggested opportunities for improvement are listed below:</td>
</tr>
<tr>
<td>Single-sensor with low distortion recording system</td>
</tr>
<tr>
<td>Broadband with extended low-frequency</td>
</tr>
<tr>
<td>High-productivity</td>
</tr>
<tr>
<td>Source density or receiver density?</td>
</tr>
<tr>
<td>Single sensor or small array?</td>
</tr>
<tr>
<td>Skinny line or fat line?</td>
</tr>
<tr>
<td>1C or 3C?</td>
</tr>
<tr>
<td>Geophones or MEMS/GAGs?</td>
</tr>
<tr>
<td>Cables or Nodes?</td>
</tr>
<tr>
<td>Receiver gather or cross-spread/OVT gathers?</td>
</tr>
<tr>
<td>Narrow, WAZ or FAZ?</td>
</tr>
<tr>
<td>How to extend the low and high boundaries of the frequency bandwidth?</td>
</tr>
</tbody>
</table>

To conclude the event, Khaled Shams Al-Deen, Team Leader, Exploration Operations, thanked the technical committee, the participants and the SEG organization. Shams Al-Deen highlighted that KOC, following healthy and lengthy debates, decided to pursue the management vision in adopting the technology. He then proposed hosting a similar event in three years as a follow-up to this successful workshop.

In addition to the activities that took place in North Kuwait and at the Regency Hotel, a gala dinner was organized for all workshop participants and dignitaries under the patronage of KOC C&MD Sami Al-Rushaid which took place at the Hubara Center. The night reflected the Kuwaiti hospitality with its culinary delicacies, traditional music and ambiance.
Regulators have approved a bionic eye for the first time in the U.S., saying Second Sight Medical Products Inc.’s retinal prosthesis can be used to treat a certain kind of blindness. The Argus II sends electrical stimulation to the retina to induce vision in individuals afflicted with retinitis pigmentosa. This disorder, which can run in families, damages and kills the cells in the retina - a tissue layer at the back of the eye - that process light. The disease causes vision to become increasingly blurry until they can't see at all. Around 100,000 patients in the U.S. have the condition. The Argus II, which is already available in Europe, can't restore sight completely, but it can improve vision in individuals who can see almost nothing. The device works by bypassing the damaged cells that process light. Video cameras mounted on glasses capture the visual information in the form of light; the data are then transmitted wirelessly to the implant to trigger electrodes in the chip to stimulate pixels of light on the retina. This information is then sent to the brain and processed normally as an image.

In projects backed by NASA as well as proposals put forward by private space contractors, scientists want to develop techniques that can pinpoint relatively small but still potentially devastating meteoroids, comets and asteroids that threaten to strike Earth. These would give notice of impact of several days or possibly weeks and allow threatened areas to be evacuated. Astronomers believe they have pinpointed all large asteroids whose orbits bring them close to Earth. To date, none has been found on a collision course with our planet. However, small asteroids only a few dozen meters across are very difficult to spot but massive enough to cause local devastation. Had the time of entry of the Chelyabinsk meteorite into the atmosphere varied by only a few hours; its path would have brought it down over much larger population centers in northern England; hence the pressure from astronomers to develop ways to pinpoint small objects in space. Russia’s Academy of Sciences said the object that struck Chelyabinsk weighed about 10 tons. It was probably part of a larger meteorite that had entered the atmosphere at about 30km per second before breaking up. The energy it released was comparable with a small nuclear bomb exploding.
Breakthrough Laser Cooling System Could Save Space and Energy

A research team at Singapore’s Nanyang Technological University (NTU) has successfully used a laser to cool down a semiconductor material known as Cadmium Sulfide. The results of the recently published study could lead to the development of self-cooling computer chips and smaller, more energy efficient air conditioners and refrigerators that don’t produce greenhouse gases. Cadmium Sulfide, an inorganic compound, is a type of group II-IV semiconductor commonly used in pigments to form the color yellow. It is also used as a thin-film layer in solar cells, sensors and electronics. Led by Assistant Professor Xiong Qihua from the School of Physical and Mathematical Sciences and the School of Electrical and Electronic Engineering, the research team optically-refrigerated the compound from 20° C (68° F) down to -20° C (-4° F). The potential for using semiconductors as the basis for cooling structures powered by light could have some very usable permutations in the real world. Currently, high-powered devices such as Magnetic Resonance Imagiers (MRIs), night-vision goggles, satellite cameras, and even air-conditioning systems and refrigerators all have one thing in common: they have bulky, noisy, highly mechanical or complex cooling systems. These systems consume large amounts of power and – in the case of refrigerants especially – often release harmful greenhouse gases into the atmosphere. The breakthrough in laser cooling (aka optical refrigeration) technology could lead to compact, cost effective, vibration-free and cryogen-less cooling systems in many different applications. CPUs could reduce their reliance on external cooling systems like fans and incorporate built-in laser controlled systems instead. The potential for minimized heat and prolonged battery life in items such as tablets and smartphones is another example.

Printing three dimensional objects with incredibly fine details is now possible using “two-photon lithography.” With this technology, tiny structures on a nanometer scale can be fabricated. Researchers at the Vienna University of Technology (TU Vienna) have now made a major breakthrough in speeding up this printing technique: The high-precision-3D-printer at TU Vienna is orders of magnitude faster than similar devices. This opens up completely new areas of application, such as in medicine. The 3D printer uses a liquid resin, which is hardened at precisely the correct spots by a focused laser beam. The focal point of the laser beam is guided through the resin by movable mirrors and leaves behind a polymerized line of solid polymer, just a few hundred nanometers wide. This high resolution enables the creation of intricately structured sculptures as tiny as a grain of sand. “Until now, this technique used to be quite slow,” says Professor Jürgen Stampfl from the Institute of Materials Science and Technology at the TU Vienna. “The printing speed used to be measured in millimeters per second – our device can do five meters in one second.” In two-photon lithography, this is a world record. Researchers all over the world are working on 3D printers today – at universities as well as in industry. Because of the dramatically increased speed, much larger objects can now be created in a given period of time. This makes two-photon-lithography an interesting technique for industry. At the TU Vienna, scientists are now developing bio-compatible resins for medical applications. They can be used to create scaffolds to which living cells can attach themselves facilitating the systematic creation of biological tissues. The 3D printer could also be used to create tailor made construction parts for biomedical technology or nanotechnology.
While time spent online can be hugely productive, compulsive Internet use can interfere with daily life, work, and relationships. When you feel more comfortable with your online friends than your real ones, or you can’t stop yourself from playing games, chatting, or compulsively surfing - even when it has negative consequences in your life - then you may be using the Internet too much. Learn about the signs and symptoms of Internet addiction and how to balance your life online and off.

**What is Internet addiction or computer addiction?**

Internet Addiction, otherwise known as computer addiction, online addiction, or internet addiction disorder (IAD), covers a variety of impulse-control problems, including:

- **Cyber-Relationship Addiction** – Addiction to social networking, chat rooms, and messaging to the point where virtual, online friends become more important than real-life relationships with family and friends.

- **Net Compulsions** – Such as compulsive online gaming, gambling, stock trading, or compulsive use of online auction sites such as eBay, often resulting in financial and job-related problems.

- **Information Overload** – Compulsive web surfing or database searching, leading to lower work productivity and less social interaction with family and friends.

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- **Information Overload** – Compulsive web surfing or database searching, leading to lower work productivity and less social interaction with family and friends.

- **Computer Addiction** – Obsessive playing of off-line computer games, such as Solitaire or Minesweeper, or obsessive computer programming.

**Healthy vs. Unhealthy Internet Use**

The Internet provides a constant, ever-changing source of information and entertainment, and can be accessed from most smart phones as well as tablets, laptops, and computers. Email, blogs, social networks, and message boards allow for both public and anonymous communication about any topic. But how much is too much Internet usage?

Each person’s Internet use is different. You might need to use the Internet extensively for your work, for example, or you might rely heavily on social networking sites to keep in touch with faraway family and friends. Spending a lot of time online only becomes a problem when it absorbs too much of your time, causing you to neglect your relationships, your work, school, or other important things in your life. If you keep repeating compulsive Internet behavior despite the negative consequences in your offline life, then it’s time to strike a new balance.

**Risk factors for Internet addiction and computer addiction**

You are at greater risk of Internet addiction if:

- **You suffer from anxiety.** You may use the Internet to distract yourself from your worries and fears. An anxiety disorder like obsessive-compulsive disorder may also contribute to excessive email checking and compulsive Internet use.

- **You are depressed.** The Internet can be an escape from feelings of depression, but too much time online can make things worse. Internet addiction further contributes to stress, isolation and loneliness.

**How do people become addicted to the Internet?**

Many people turn to the Internet in order to manage unpleasant feelings such as stress, loneliness, depression,
• You have any other addictions. Many Internet addicts suffer from other addictions.

• You lack social support. Internet addicts often use social networking sites, instant messaging, or online gaming as a safe way of establishing new relationships and more confidently relating to others.

• You are less mobile or socially active than you once were. For example, you may be coping with a new disability that limits your ability to drive. Or you may be parenting very young children, which can make it hard to leave the house or connect with old friends.

• You are stressed. While some people use the Internet to relieve stress, it can have a counterproductive effect. The longer you spend online, the higher your stress levels will be.

Signs and symptoms of Internet addiction or computer addiction

Signs and symptoms of Internet addiction vary from person to person. For example, there are no set hours per day or number of messages sent that indicate Internet addiction. But here are some general warning signs that your Internet use may have become a problem:

• Losing track of time online. Do you frequently find yourself on the Internet longer than you intended? Does a few minutes turn in to a few hours? Do you get irritated or cranky if your online time is interrupted?

• Having trouble completing tasks at work or home. Do you find laundry piling up and little food in the house for dinner because you’ve been busy online? Perhaps you find yourself working late more often because you can’t complete your work on time - then staying even longer when everyone else has gone home so you can use the Internet freely.

• Isolation from family and friends. Is your social life suffering because of all the time you spend online? Are you neglecting your family and friends? Do you feel like no one in your “real” life - even your spouse - understands you like your online friends?

• Feeling guilty or defensive about your Internet use. Are you sick of your spouse nagging you to get off the computer and spend time together? Do you hide your Internet use or lie to your boss and family about the amount of time you spend on the computer and what you do while you’re online?

• Feeling a sense of euphoria while involved in Internet activities. Do you use the Internet as an outlet when stressed, sad, or for sexual gratification or excitement? Have you tried to limit your Internet time but failed?

Physical symptoms of Internet addiction

Internet or computer addiction can also cause physical discomfort such as:

• Carpal Tunnel Syndrome (pain and numbness in hands and wrists)
• Dry eyes or strained vision
• Back aches and neck aches; severe headaches
• Sleep disturbances
• Pronounced weight gain or weight loss

Tips for dealing with Internet addiction:

• Seek out friends and acquaintances who “couldn’t care less” about the Internet. Start limiting your Internet use sensibly.

• Alter your routine to incorporate other activities and decrease Internet use goals and stick to them. Take frequent breaks, at least 5 minutes each hour, and do some other activity.

• Treat the Internet as a tool. Stay focused on the fact that all life is not yet online.

• Stay connected to the offline world. Visit museums, music, and live theater. Novels and poetry readings are hard to experience online.

• Encourage them to seek professional counseling.

Tips to helping others with Internet addiction

• Be a good role model. Manage the Internet and computer use in your own life well.

• Introduce the Internet addict to other people who handle their Internet use sensibly.

• Get your friend involved in non-Internet related interests.

• Talk to your friend about your concerns related to their Internet use.

• Support their desire for change if they think they have a problem.

• Encourage them to seek professional counseling.
As part of its activities to mark National and Liberation Day celebrations, KOC organized special activities at its camp in Al-Zour in the presence of KOC employees and their families. A range of recreational activities and sports competitions were held over two days, including indoor football games, basketball games, and volleyball games.

This year witnessed the organization of the "Iron Man" Competition for the first time, which is a competition for lifting heavy weights.

A contest for the best tent was held while children enjoyed their time at the main tent engaged in a variety of games and activities.

Camp management gave gifts to winners of different competitions, where 2,000 gifts were distributed during the two-day event to the children of KOC staff and their families amid an atmosphere of joy and happiness.

The event was successful thanks to the directives of Team Leader Community Services Nouri Al-Khatrash, and the efforts of Senior Admin Officer Khaled Al-Muhanna, Chief Admin Officer Jassem Al-Nasser, Senior Admin Officers Ali Al-Nijadah and Abdullah Al-Otaibi, and Center Controllers Layla Al-Shatti and Intisar Al-Qattan.
KOC Publishes Book About Oil in Braille

KOC C&MD Sami Al-Rushaid recently received the Chairman of the Kuwait Blind Association (KBA) Fayez Al-Azmi, who visited KOC and paid tribute to the Company for taking the initiative to print a book titled: “From the Well to the Carrier” in Braille. Al-Azmi said that the book will provide KBA with basic information about the oil industry.

During their meeting, Al-Azmi expressed his appreciation for KOC’s interest and care for the blind community in Kuwait. For his part, Al-Rushaid stressed that this segment of society deserves care and support from all Kuwaitis at all levels.

In a statement he made, Al-Azmi maintained that the book has been printed in Arabic and English and can be distributed, at a later stage, to Arab and foreign countries in order to provide the blind with information about the mechanisms of production and the nature of the work that KOC engages in.

For his part, Manager of Public Relations and Information, Abdul Khaleq Al-Ali, said that such an initiative, and other initiatives taken by the company, stem from the Company’s commitment to fulfill its role in the development of society, and to provide as many services as possible to different segments of society.
KPC recently organized the International Traffic Conference at the Kuwait Regency Hotel under the patronage of the Managing Director for Governmental, Parliamentary, PR and Information Relations Sheikh Talal Al-Khaled Al-Ahmad Al-Sabah. The aim of the conference was to bring together members from various government authorities and a selection of international experts to discuss ways in which to deal with Kuwait’s growing traffic issues.

In his inaugural speech, Sheikh Talal Al-Khalid said the conference reflects the concern of the country’s state institutions and their desire to make efforts to help take part in solving Kuwait’s mounting traffic problems. The conference, he said, had the goal of searching for an appropriate solution for the traffic crisis which represents a hindrance against the implementation of Kuwait’s future strategic plans. Sheikh Talal Al-Khaled added that KPC has a long history of adopting the concepts of Social Responsibility and exerts its utmost to foster this principle within KPC and its subsidiaries, as well as beyond the oil sector through the activities it sponsors, such as the traffic conference. He added that KPC has shouldered the responsibility of pushing forward the wheel of sustainable development by allotting long-term programs for the good of the employees, their families and the entire Kuwaiti society. He maintained that KPC decided to be a strategic partner in such a significant conference in order to provide appropriate solutions for this crisis which Kuwait now faces. He further indicated that KPC’s participation in sponsoring the conference stemmed from its diligent eagerness to achieve the concepts of social responsibility which not only need donations from large institutions, but also effective participation in order for them to be applied practically.

Sheikh Talal posed a number of possible solutions for the traffic crisis in Kuwait, which requires an appropriate solution based on the growing population and growing number of new cars being driven on an existing road network which is not being expanded. He discussed developing the road network in line with the increasing population, reinforcing the concept of discipline and rule of law by compelling drivers to comply with traffic regulations, increasing the awareness of citizens and residents on traffic rules and creating stiffer penalties for violators. He added that there was also a need to put an end to backchannel mediation or “wasta” during the process of issuing driving licenses or dropping penalties for traffic violators. He also encouraged more people in Kuwait to carpool when possible and he also maintained the Kuwait could possibly consider toll systems on its roads and be more stringent in regard to suspending licenses of repeat traffic offenders.

Sheikh Talal also upheld his belief that it was of great importance for the Kuwait Metro project to be established and completed as soon as possible, as this will greatly aid in alleviating traffic congestion in Kuwait.

It is worth mentioning that the conference was attended by members from Municipal Council and senior officials from the Ministry of Interior.

The ITC agenda was held under the title of “Traffic Congestion…Solutions” and was comprised of a host of presentations conducted by officials, chairmen, advisors, consultants, specialists and researchers from inside and outside the country, who shed light on their experiences and the latest practical and technical solutions to this problem, which constitutes a source of concern for the governments and peoples of the whole world.
1964

KOC Employee at telephone booth
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