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Midyan Gas Plant: An Engineering Landmark

The emergence of Midyan gas plant serves as another shining example of Saudi Aramco's gas production strategy to achieve several objectives by supporting the national economy of Saudi Arabia while also opening up key industrial opportunities at the same time.



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Fadhili: Powering the Kingdom, Fueling the New Saudi Economy

Another major milestone was reached in Saudi Aramco's drive to further expand gas production to help meet the Kingdom's growing energy demand with the official signing ceremony to develop the Fadhilli gas project, which will process gas from both onshore and offshore fields.



The Saudi Arabian Oil Company, also known as Saudi Aramco, was established by Royal Decree in November 1988 to succeed the original U.S. concessionary company, Aramco. The Aramco concession dates back to 1933.

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Innovation and Young Saudi Talent Take the Helm in Tanajib

A unique new Offshore Floating Hub – a huge rededicated tanker – has been commissioned by Saudi Aramco’s Marine Department to support offshore drilling operations. The Hub is the first of its kind in the world, and represents a paradigm shift in the way offshore logistics operations are managed.



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2015 Annual Review

A theme of overcoming challenges and seizing new opportunities is reflected in the 2015 *Annual Review* released by Saudi Aramco. Titled “Through Our Work We Define Opportunity,” the report details another remarkable year recorded by the company in crude oil and gas production, while also making significant progress on continued domestic and international downstream expansion.

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About the cover:

Saudi Aramco’s Marine Department has launched a first of its kind Offshore Floating Hub to support offshore drilling operations. Currently anchored in Southern Hasbah anchorage and supporting seven offshore drilling rigs, the Hub represents a paradigm shift in the way offshore logistics operations are managed.



MIDYAN

AN ENGINEERING LANDMARK

BY FAYEZ S. AL-BISHI AND BANDER M. ALHARBI



Steaming toward completion as cranes tower above, Midyan gas plant in the Kingdom's northern region is an integral part of the company's long-term gas production strategy to provide energy to the Kingdom and create economic opportunities. *Photo by Abdulaziz Al-Moiweed/MPD*

ASPIRANT



Deep in the northwest area of Saudi Arabia, an engineering landmark is slowly but surely rising in an area west of Tabuk, marking yet another Saudi Aramco project that will help bring about economic strength to the region and create jobs for young Saudis.

Tabuk is a region with a cultural heritage that reaches deep into history with a diverse natural landscape that is among the most beautiful areas in Saudi Arabia. It's popular for tourists and visitors who flock to the pristine beaches stretching along the coastline backed by mountains, water springs, reddish sand dunes and rocky hills. Tabuk is a region known historically as a crossroads of civilizations. It is also a region of economic affluence, and a known stopover for migratory birds.

The emergence of the Midyan gas plant is yet another prime example of Saudi Aramco's gas production strategy to achieve several objectives by supporting the national economy and opening up important industrial opportunities.

While the unique construction of the facility and the eventual production numbers are indeed impressive, the unified team behind the rise of Midyan has overcome several challenges along the way, which is equally impressive.



Above, left to right: Ammar A. Al-Tayyar, Dhari S. Al-Dossary, Abdulkhaleg Al-Humailis, Ziyad A. Enayah and Talal H. Al-Otaibi

United by a common ambition

Ammar A. Al-Tayyar, Midyan gas plant project manager, supervises the project team, which includes 18 engineers. All are united by a common ambition of delivering the project.

The Midyan field was first discovered in 1992, enhancing the company's gas production strategy to achieve several objectives by supporting the national economy and opening up important industrial opportunities.

Construction of the plant, which began in 2013, is now more than 86%

complete, and the plant is scheduled to go into operation in December 2016. The plant adopts the Green Dubai initiative, which limits the burning of crude oil and diesel to generate electricity, replacing them with gas, which is known to be efficient, clean, and low cost. Gas is also an environmentally friendly fuel that produces lower harmful emissions.

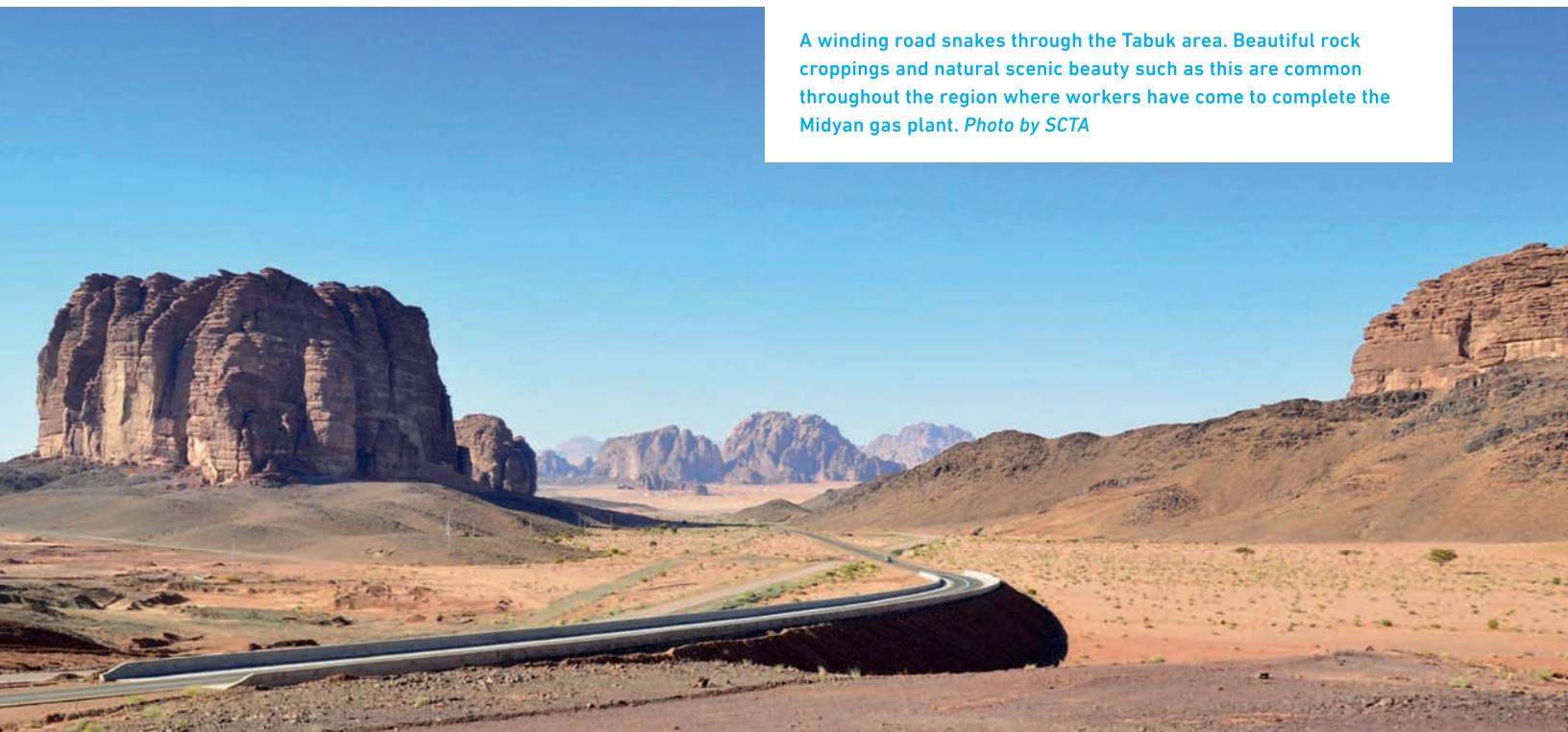
Midyan gas plant receives gas supplies from seven surrounding wells, and is designed to produce and process 75 million standard cubic feet per day (MMscfd) of nonassociated gas and

4,500 barrels per day of condensates. The plant will supply the products to a high-efficiency power plant in al-Muwaylih near Dubai, for use in electricity generation.

Once gas from Midyan reaches the al-Muwaylih power plant, it will produce 570 megawatts of power, including 50 megawatts that will be produced by the Saudi Electricity Company's (SEC) high-efficiency solar thermal power station.

"Midyan gas plant will separate and filter gas from water and condensates to

A winding road snakes through the Tabuk area. Beautiful rock croppings and natural scenic beauty such as this are common throughout the region where workers have come to complete the Midyan gas plant. Photo by SCTA





make it ready for use,” says Al-Tayyar. “This is sweet gas (sulfur free) that does not need long processing. Condensates and gas will be transported through two parallel pipelines extending for 84 kilometers (km) to a bulk plant near SEC’s power plant in al-Muwaylih.”

Based on previous agreements between Saudi Aramco and SEC, the Midyan gas plant will be supplied with

electricity from a 132 KV power plant in al-Bida, 35 km away from Midyan. Substations in the gas plant will lower the voltage to 480 volts as needed for the plant, which will in turn supply al-Muwaylih power plant with gas.

Early challenges overcome

Supervising the project design and planning is not like its implementation; there

is a huge difference between the two.

The first challenge the team faced was the remote location of the project and the absence of all forms of industrial support. No nearby industrial cities existed to provide the project with engineering and logistical support. Abdulkhaleg Al-Humailis, the first engineer to arrive at the project site, recalls that the area was completely empty.

He described the difficulties he faced when he first came to the site three years ago. Al-Humailis devoted his efforts at first to securing food, water and accommodation, until he found a basic room in al-Khuraybah village, not far from the project site, where he stayed for about one year.

Al-Humailis says the project has given him considerable management and communication skills. He advises young employees to begin their careers in similar areas as it can boost their self-confidence, give them a sense of belonging, and develop their abilities in dealing with challenges.



Khaled M. Al-Qarni, center, says Midyan’s remote location helps employees from different parts of the Kingdom to bond. For Al-Qarni, this is the first time he has the opportunity to test his skills in the field.

Midyan gas plant project strategies

The first turnkey project to design and build the plant completely in-Kingdom in accordance with Saudi Aramco specifications and standards with a contractor from the Kingdom.

First plant in the Kingdom where gas processing units have been fabricated off-site, then transported and installed on-site, which expedited the execution and reduced the cost, with also the possibility of re-use in future projects.

Joint cooperation with appropriate parties in the region, which facilitated operations.

Creating job opportunities for fresh graduates in engineering and professional fields in the project.

Using the Duba Port for the first time to transport equipment from outside the Kingdom.

Notable achievements of the project

5 million man-hours without any lost-time injuries.

66% of purchases and 20% of operations awarded to local vendors and contractors.

150 Saudis received engineering and professional training in the project.

700 tons of heavy equipment cleared from Duba Port on three shipments in a record three days for each shipment.

Promoting tourism through the distribution of brochures highlighting the many archaeological sites in the region that can be visited.



The plant adopts the Green Duba initiative, which limits the burning of crude oil and diesel to generate electricity, replacing them with gas, which is efficient, clean, and low cost.

As for the project, he says significant cost avoidance has been achieved, such as the \$14 million in resources attained by using available pipes. Al-Humailis says people in the region are excited about Saudi Aramco's projects and view them positively as they support local development and also employ young people from the region — a key objective of the project.

Fierce winds

Another major challenge in the area is the weather — more specifically high winds that can reach 75 kilometers per hour (kph). At such wind speeds, crane work becomes impossible as cranes can only operate in winds of up to 35 kph as per the standard of Saudi Aramco's Loss Prevention Department. Similarly, no welding can be successfully performed in high winds, because bubbles can form in the welding area, impairing the quality of the weld. To overcome this challenge, on the days with light winds, employees work quickly and effectively.

Studies are currently underway for the establishment of wind farms to capitalize on the windy days and generate more electricity in this area.

A third challenge is earthquakes. The region recently experienced an earthquake that measured 4.5 on the Richter scale. The design of the plant takes into

account this natural phenomenon and it is therefore able to withstand earthquakes that reach up to 7 on the Richter scale. That's a testament once again that safety is always a priority for any Saudi Aramco project.

The Midyan gas plant is the Kingdom's first turnkey project designed and built in accordance with Saudi Aramco specifications and standards with a contractor from the Kingdom. It is also the first plant in the Kingdom where gas processing units were fabricated abroad and then transported and installed on-site, which expedited execution and reduced costs. In addition, these units can be re-used in future projects.

IKTVA program and unique design

The project promotes the In-Kingdom Total Value Added (IKTVA) initiative in terms of maximizing local content. Installation was a hallmark in the plant, where internal parts were provided from a domestic manufacturer, then sent away to be installed and then re-shipped to the Duba Port to be assembled at the project site.

The 19 units — the full number of construction units — are easy to install and remove, making it easy for Saudi Aramco to relocate the plant, if needed.

"The project is based on build-



ing industrial units separately before they are assembled in the Midyan gas plant,” explains Ziyad A. Enayah, the first engineer to work on the plant design. “This is a pioneering concept and will be applied in future gas development projects.”

The generators are powered by variable speed engines that help reduce energy consumption and are one of the new energy efficiency technologies deployed in the plant project.

Furthermore, the project does not require an on-site fire

brigade thanks to a modern system designed to address fire disasters where water tanks and a large water network are installed with more fire hoses.

From India to Midyan

Dhari S. Al-Dossary joined the team in 2013 as a project quality team leader. Al-Dossary was one of three engineers who spent 18 months in India to follow up on the structural units. “Among the challenges we faced in India was the different society and an environment full of difficulties,” he says. “We lived in a province 300 km and a six-hour drive away from the nearest airport, so it would not have been possible to move without cars.”

Al-Dossary has worked on several projects, including Abqaiq, Shedgum, Haradh 2, Naim and Wasea Bulk Plant.

Badea M. Saggaf, a project engineer in charge of utilities, says the project faced challenges with the structural design units due to the fact that they were being used for the first time in a Saudi Aramco project. It required spending time in India

where young engineers were involved in ensuring that the project needs were carried out effectively.

“Those young people were away from their families to build a facility that the Kingdom feels proud of and contributes to the national economy, as well as Vision 2030. We are all proud to be part of this great project,” says Saggaf.

Project engineer Emad M. Alsafi adds: “There is something that distinguishes remote areas from others, the teamwork and team spirit make a person keen on precision and achievement. The after working hours social relationships are strong among colleagues.”

Alsafi began working with the project team at the end of the design phase, then went to India in mid-2015 and stayed six months, joining his colleagues Al-Dossary and Saggaf to follow up on installation of the structural units in the Indian province of Gujarat.

A social environment has emerged

One of the most noticeable characteristics of the team at Midyan are the strong ties that come from the team spirit.

Khaled M. Al-Qarni, a project engineer, agrees that the remote location helps employees from different parts of the Kingdom to bond.

“The Midyan work environment is unprecedented.”

His colleague, Talal H. Al-Otaibi, who leads the project information and communication, says the project fulfills a vision to serve the northern region.

“We are proud of implementing this ambitious vision. Among the challenges of this project was the strict compliance with safety standards,” he explains.

“The work is hard, but when we meet in the community tent at night we socialize and forget about our exhaustion. I have no doubt that this region will have a lot of projects, and Tabuk will benefit in many ways as a result of the efforts made by our project staff.”



A crane works to erect a process flare stack at the Midyan gas plant project site. Started in 2013, construction on the plant is now more than 86% complete, and it is scheduled to go into full operation by the end of the year.

FADHILI

POWERING *the* KINGDOM

FUELING THE NEW

Saudi Economy

By ADIL A. AL-SADIQ

SAUDI ARAMCO'S EFFORTS TO MEET THE KINGDOM'S GROWING ENERGY DEMAND HAVE TAKEN A GREAT LEAP FORWARD WITH A SIGNING CEREMONY FOR THE GIANT FADHILI GAS PROJECT, A MAJOR MILESTONE IN THE COMPANY'S DRIVE TO EXPAND GAS PRODUCTION.

Slated to be completed by the close of 2019, the project will take its place as a key component in the Kingdom's master gas system and will process gas from both onshore and offshore fields.

Together with Wasit and Midyan, Saudi Aramco's two other new gas projects, Fadhili will boost nonassociated gas processing capacity by more than 5 billion standard cubic feet per day (Bscfd).



Signing Ceremony of

حفل توقيع

Fadhili Program مشروع الفاضلي

Wednesday, July 20, 2016

١٥ شوال ١٤٣٧ هـ



Ahmed Al-Jabr

Fahad Al Helal

Saudi Aramco president and CEO Amin Nasser (far right) presides over one of four signing ceremonies that took place at the Fadhili gas project recently — here with Ahmed Al-Jabr from Saudi KAD for Fadhili Downstream, and with vice president of Project Management Fahad E. Al Helal signing on behalf of Saudi Aramco.



Tareq Al-Seflan, Bader Al-Gahtani, Abdulrahman Al-Husaini, Saleh Al-Balooshi and Ahmed Al-Khunaifer look over plans for the Fadhili gas project, which is slated to be completed by the end of 2019.



Left to right: Mohammed Buali, Ali Al-Essa, Essa Makrami and Abdullah Al-Gahtani discuss the Fadhili gas project.

Saudi industries stand to benefit from a projected capacity increase of over 17 Bscfd by 2020 and diversification strategies for the Saudi economic landscape will receive a massive push forward.

The project will be developed as a cost in excess of 50

billion Saudi riyals with in-Kingdom expenditures taking priority, benefiting localization initiatives that will account for 40% of the total cost.

Some 4,500 jobs for Saudis are expected to be created in terms of professional training and permanent and temporary positions at Fadhili.

As a grassroots and ambitious energy project of Saudi Aramco, the Fadhili Gas and Electricity Project will

process 2.5 Bscfd of non-associated sour gas. This is considered one of the most important projects that support Saudi Aramco's strategy to meet the in-King-

Left: Hisham U. Al-Derhalli, right: Awdha Al-Shahrani



dom energy demand and reduce liquid burning. It is also the first mega-project of the company that implements the capital efficiency initiative.

The Fadhili plant is located 30 km southwest of the Khursaniyah gas plant. The plant will process 2 Bscfd of nonassociated gas from the offshore Hasbah field and 500

the project, and enhancing all procedures and completing all phases of the project.”

An active integrated project team adopting modern mega-project frameworks is required for implementing the initiative.

When asked about how to ensure the implementation of the capital efficiency initiative throughout all stages of the project, he replied “We have international standards and criteria in place, which would be used to test all milestones one by one. One criterion is the quantities of construction

“Saudi Aramco’s multibillion dollar investment in Fadhili will considerably increase the share of gas in the Kingdom’s energy mix and fits in with our long-term strategy to lower emissions.” – AMIN NASSER, PRESIDENT AND CEO

million standard cubic feet per day (MMscfd) of nonassociated gas from the Khursaniyah onshore field. The plant is being built in an area where no other plants exist, and also, a new department was created to handle the project in August 2013.

materials used in Fadhili as compared to other gas plants selected for benchmarking and course correction. Also, there are the cost and scheduling criteria, which are used in all project control programs. Scheduling means the duration of implementing all project phases.”

CAPITAL EFFICIENCY INITIATIVE IMPLEMENTATION

This giant project is the first rollout of Saudi Aramco’s capital efficiency initiative, which is one of the Strategic Transformation initiatives launched by the company a few years ago.

Fadhili gas plant project manager, Hisham U. Al-Derhali, said “We take pride in knowing that this is the first Saudi Aramco project to be built under the capital effi-

ciency initiative, which focuses on cost reduction and implementation of the best-in-class Saudi Aramco standards and specifications while ensuring timely execution of

ELECTRICITY

Contributing to meeting the increasing in-Kingdom electricity demand, the Fadhili gas and electricity project is a joint venture for power generation between Saudi Aramco and the Saudi Electricity Company.

Awdha Al-Shahrani, a project engineer, said “The Fadhili project includes a cogeneration plant to supply it with power and steam. This is one of the projects associated with the gas plant and is also considered the first of its kind in the Kingdom, representing the partnership between Saudi Aramco and the Saudi Electricity Company. This project will produce 1,500 megawatts covering the Eastern Province as well as other regions. It will also meet any shortage that may arise in the Kingdom over the coming years as a result of the increasing industrial, urban and population growth.”

A SPECIAL PROJECT

What makes this project special? Khalid Khudair, the engineer assigned to operate the project after its completion by Project Management, said “among the many gas plants in Saudi Aramco, the Fadhili gas plant features several unique characteristics; it is the first of its kind to use low BTU gas and the Khursaniyah field is the first to be constructed based on these standards.”

Khudair added, “The Fadhili gas plant is also



Yousef M. Khammas

Left: Osama Al-Salih
Right: Badr Al-Qahtani



the first plant to produce cogenerated power.”

Regarding the construction schedule, Yousef M. Al-Khammas, senior project engineer at the Fadhilli project, said “Construction of the plant is scheduled to commence soon.

Site preparation work for construction and laying the foundations are underway. The execution and operation of the secondary utility plants will be completed as the first important and main part of the Fadhilli project. These plants will provide water and air systems required by the plant equipment, in addition to the nitrogen production system, steam distribution system and the main electricity feeding all units of the plant.”

This project strives to minimize the burning of heavy hydrocarbon liquids using highly efficient methods. Instead, it will use highly efficient gas, especially during summer when domestic energy demand increases, to save sufficient electricity capacity for domestic use during peak times.

“We have a new ambition in this mega-project; that is to increase the Saudization level at the plant during the project construction and after operation. This will be achieved by recruiting qualified young Saudis in high proportions aligned with new labor regulations in the Kingdom,” Al-Derhalli added.

SUPPORT OF THE SAUDI ECONOMY

The Fadhilli project will support economic development of the Kingdom. It is also recognized as the best economic alternative to meet a significant portion of the additional sales gas demand, by injecting 1.5 Bscfd of sales gas into the master gas system, and 465 MMscfd of fuel in an adjacent cogeneration plant.

The development of the Fadhilli project will go through several stages.

Al-Derhalli outlined the project stages as follows: “First, development of the offshore Hasbah field; second, development of the onshore Khursaniyah field; and third, development and construction of the Fadhilli gas and electricity project. This is in addition to the development of the Fadhilli plant site, development and construction of the bachelor employee housing at Fadhilli field and the company’s adjacent plants.

“There are also three other projects, which are the main pipelines, separate pipeline, and the cogeneration power project,” he added.

“Gas will be of vital importance to the Kingdom’s ongoing industrial diversification and economic development while enabling better energy efficiency in the utility sector. The increased gas production will mean more feedstock for industries to expand, and new ones to emerge that will help drive job creation, a key objective of Saudi Vision 2030.”

— AMIN NASSER, PRESIDENT AND CEO



Left: Ahmad I. Al-Khonaifer
Right: Usama Y. Abdulfattah

GLOBAL EXPERIENCES

Osama Al-Salih, a project manager at the Fadhili Gas Plant Projects Department, said “The initial design stage for the Fadhili project was carried out in three regions of the world: Saudi Arabia, the United Kingdom and the UAE.”

Abdulaziz Al-Towayan, the project manager in charge of the development of production facilities at the offshore Hasbah field, said “In the UAE, the initial designs were completed to develop the production facilities of the offshore Hasbah field by building six gas production platforms, two other platforms to connect the field to the plant, and two 160 km long pipelines to carry about 2 Bscfd of nonassociated gas. There will also be 50 km of electrical and communication extensions from gas-oil separation plant-2 in Marjan to the plant — all undersea.”

PLANT DIVISIONS

Badr Al-Qahtani, a project manager in charge of gas treatment facilities at the Fadhili project, said “The Fadhili gas plant includes three main divisions: natural gas treatment, sulfur recovery and acid gas treatment, and plant utilities.”

He added, “There is another distinctive feature of the Fadhili plant with regard to sulfur treatment. The Fadhili plant is designed to achieve a maximum sulfur recovery and acid gas treatment of 99.9% using state-of-the-art innovative technologies to meet high environment protection standards.”

SAFETY FIRST

Elaborating on safety requirements at the plant, Ahmad I. Al-Khonaifer, a project engineer, said “The Fadhili project team adopts the highest safety and quality standards for design and site selection, taking into consideration the wind direction and associated hazards in case of a gas leak or any fire incidents. The well-studied Fadhili plant design helps

the wind carry any leaked gas away from the employees’ worksites.”

Ahmad Al-Qahtani, a senior project engineer, said “I was assigned the job of supervising the main designs of the plant in addition to other tasks, including

energy stabilization, safety and engineering standards and measures, as well as general designs.”

He added, “We were keen to meet international standards and criteria, and Saudi Aramco standards for engineering, environment protection, security and safety. We succeeded in developing the designs in alignment with our desire to build the plant on the smallest possible area with the lowest possible cost.

“The project also includes the cogeneration plant and a building for plant administration, firefighting, clinic, transportation and telecommunications,” Al-Qahtani said.

SITE PREPARATIONS

The offices of the employees in charge of site preparation and infrastructure works are located in al-Khobar, in the Eastern Province.

Usama Y. Abdulfattah, the project manager who is responsible for initial works and infrastructure projects, and site preparation for the Fadhili project, said “My mission in the the Fadhili project is to supervise the construction of the project’s infrastructure as well as five main units. These units are: A community unit for building 2,500 residential units, including all support facilities and services; a communication and protection systems unit (security); an industrial facilities support unit; a project site preparation unit; and the unit responsible for coordination between Saudi Aramco and the cogeneration (steam and electricity) plant.”

Al-Derhalli said, “The giant Fadhili gas and electricity project program is a pride for the Kingdom and Saudi Aramco alike. The highest levels of accountability and commitment are demonstrated in the project team to deliver it as scheduled taking into consideration the implementation of (the Fadhili standard criteria), which will be basic work rules for the company’s future projects.” ☺



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PHOTOS BY

MOAYED AL-QATTAN/MPD





Members of management officially cut the ribbon during the inauguration ceremony held for the Marine Offshore Floating Hub in May. Attending the ribbon cutting were Abdulhakim A. Al-Gouhi, vice president of Industrial Services; Abdul H. Al Rushaid, executive director of Drilling and Workover; Omar S. Al-Husaini, general manager of Drilling and Workover Operations; Naser Al Otaibi, acting manager of the Offshore Drilling Department; Bader A. Ghouth, manager of the Marine Department; Aziz Al-Qarni, superintendent of Tanajib Marine Operations; and Nasser S. Al-Yami, superintendent of Drilling Rig Support.



Abdulhakim A. Al-Gouhi, left, and Omar S. Al-Husaini, right, join other members of management in the control room as they listen to Marine Logistics senior planner Farraj Al-Ghamdi, center, explain the high-tech cargo transfer system.

Saudi Aramco's Marine Department has inaugurated a new Marine Offshore Floating Hub — a huge rededicated oil tanker — which has been commissioned primarily to support offshore drilling operations. The Hub is a supply base remotely located offshore near clusters of drilling rigs to provide timely support for the delivery of materials, e.g., drilling fluids, miscellaneous equipment, chemicals, water, and fuel. The unique operation is significantly supported by young Saudi talent, such as Marine Logistic planners Muqbil Al-Shammari and Bander Al-Mansour, who track supply vessels carrying cargo to drilling rigs.

UNIQUE CONCEPT

The unique concept has been realized after three years of extensive collaboration between the Marine and Drilling departments.

It is the first of its kind in the world and presents a paradigm shift in the way offshore logistics operations are managed.

Currently anchored in Southern Hasbah anchorage, the Hub is providing support to seven offshore drilling rigs through the combined efforts of Marine Logistics, Gas Operations and the Drilling tool house.

While an assessment of performance is in its infancy, tangible benefits have already been experienced in respect to reliability, rig supply, vessel utilization, fuel consumption and response time to well control issues.

The inauguration ceremony was presided over by executive management from both Industrial Services and Drilling and Workover (D&WO). Speaking after the ceremony, Abdul H. Al Rushaid, executive director of D&WO, praised the collective efforts of both Marine Department and D&WO personnel to make the project such a success.

SIGNIFICANT COST SAVINGS

Al Rushaid highlighted the significant savings that D&WO has been able to effect due to the Hub and its operational capability.

Abdulkhakim A. Al-Gouhi, vice president of Industrial Services, echoed these sentiments and further commented on the world first that the Hub represents and how it will benefit Saudi Aramco's image in this area.

Al-Gouhi stated that these "step changes" in operational thinking are what has made the company such a dynamic and responsive organization.

Marine manager Bader A. Ghouth spoke of overcoming great challenges to see the project through. He also thanked the many people who worked on the project, singling out Omar S. Al Husaini, general manager of D&WO Operations, for his support.

Ghouth said this achievement would not have been possible without the full support of D&WO. Khaled Abdulgader, former manager of the Offshore Drilling Department, and Ali O. Al Qarni, manager of the D&WO Service Department, both believed in the initiative and supported the Marine Department by providing the environment in which they could succeed.

Naser Al Otaibi, acting manager of the Offshore Drilling Department, said he anticipated further potential savings and more collaboration, and that he was excited with the direction the Hub was going.

Ghouth added that he also was especially proud of his team and the ability of the Marine Department to move from an asset provider to service provider by fulfilling these new initiatives while also developing young Saudi talent. Ghouth thanked Farraj O. Al Ghamdi, senior logistics planner with the Marine Department, for his efforts in leading and mentoring his team of Saudi planners on board the Hub.

Marine Logistics senior planner Abdulaziz Abuali shows members of the Marine Logistics Team the supply vessel safe routing to offshore rigs for the daily plan. From left are Sultan S. Al-Ghamdi, Muqbil Al Shammari, Sultan M. Al Qahtani, Bander Al Mansour, and Abuali.

MARINE & DRILLING SET NEW BOUNDARIES FOR CROSS COLLABORATION

The Tanajib port is a hive of activity. Forklifts come and go and spin around the dock with precision in what looks like a well-rehearsed waltz.

Ships wait in line to be restocked with supplies, from drilling equipment to mud tanks for the critical drilling operations taking place deep in the Arabian Gulf waters offshore. Some of the world's largest oil and gas fields lie beyond the blue horizon. Everything here has to be well rehearsed, because having these critical supplies arrive on time to their assigned rigs keeps production in these huge fields running smoothly, 24/7.

There is no room for error; Saudi Aramco depends on these offshore rigs receiving men and supplies on time,

Mohanad F. Alkhateeb and Saleh A. Al Ghamdi are part of the team that is supervising, executing, and monitoring Marine Logistics supply plans aboard the Marine Offshore Floating Hub.



otherwise there could be costly shutdowns. What we see is an example of logistics at its most fine-tuned and an environment where efficiency and teamwork means everything.

UNIQUE OFFSHORE HUB

The Tanajib Port, which services offshore rigs and is a crucial hub for the company's drilling operations, has transformed the way it operates to maximize efficiency, safety and reliability as part of an innovative transformation of Saudi Aramco's Marine business model.

The idea to float a Marine Offshore Floating Hub has revolutionized the way offshore rigs are supplied.

Its decks are stocked with all of the supplies and equipment to keep offshore rigs running smoothly, saving time and costly round trips to port for vessels.

As a result of the Hub functioning as a mini-Tanajib Pier, 70 nautical miles (130 kilometers) offshore, the onshore pier has significantly been de-clogged and the deployment of boats to rigs is optimized, creating significant savings for the company.

SAUDI TALENT

The Marine Logistics Department's office mobilizes all of this activity together and ensures that everything from shore to rigs operates seamlessly. What is most impressive is that a good measure of the weight of responsibility is shouldered by young Saudi talent, entrusted, empowered and mentored by their management team to carry out these critical tasks around the clock.

Aziz Al-Qarni, superintendent of Tanajib Marine Operations, meets with the Marine Logistics Team to discuss daily operations. Communication is the key to a successful operation in the highly complex field of logistics.



At the age of 36, Abdulaziz S. Abuali oversees a young team of planners, shippers and loadmasters.

He explains the role and the unexpected challenges often faced by the team.

"My job is a senior planner and a senior planner's duties are to supervise the other planners and to ensure that we are always giving the customer the best service that we can and exceed their expectations.

"Marine Logistics started in 2013 to extend the offshore supply for drilling offshore rigs. Basically, we received work requests through the SAP system and we processed every request with a particular category, according to whether it was an emergency or a normal request. We always look at their requirements in case they have a specific operation that requires additional support."

TEAMWORK

Abuali says that for his young Saudi team, the new business model with the deployment of the Hub is a unique opportunity to learn and flourish in a culture of teamwork.

"It is really a great experience for the young Saudi talent. I have learned a lot here. For them, it is really a golden opportunity at their age to gain knowledge of all of these processes of offshore drilling and the processes of different logistics. This extended offshore operation really is a great opportunity for them.

"For all of this to be a success on a daily basis requires collaboration and the teamwork here plays a really big role. You can see that we are working as floor planners day and night, 24/7, so we always have to hand over and make sure we are planning, monitoring and executing the plan and getting the desired result," Abuali explains.



Ibrahim M. Al Shihab

Ibrahim M. Al Shihab, Drilling tool house representative, 28, works on board the Hub with the Marine Logistics Team to help maintain constant communication and arrangements with all offshore gas rigs. He enjoys the work of receiving rig requirements and making them ready for shipping, which involves attention to detail and the highest levels of quality and accuracy.

“I am happy to work alongside the Marine Logistics Team as one team on this unique project,” said Al Shihab.

DYNAMIC OPERATIONS

“The operation is very dynamic — suddenly priorities can change from normal operations to emergencies, based on the cargo requests. We have to alter and adapt plans and we have to think and act fast.

“The teamwork here is a source of pride to us. All of the people here are working as a single mind. Everyone cares about the other. If you need any kind of support, your colleagues are always ready to help and happy to give you the support that you need.”

On board the cavernous Hub, 26-year-old Mohanad F. Alkhateeb is a captain and senior planner.

“Basically, the logistical operation starts at Tanajib. Our role and my role as a planner is to receive the cargo requirements of the rigs through our SAP system. Once we receive the requirements, we plan for it through a planner and shipper who plan for everything that happens from the staging area to the boats,” he explains.

“We have three types of requests — the first is emergency with a time frame of 24 hours; another one is a 48-hour request and the third is a normal request, which has a 72-hour time frame. So the drilling foreman has to choose one of the three types of request and then we have to plan accordingly.

“After we receive the request, we prioritize it and formulate the load plan for the shipper, who has the responsibility to ship the material; he will go to the yard and choose the correct materials. The materials will be delivered to the station and then sent on to the Hub. The boat type depends on the rig location, for example, we would need a boat suitable for shallow water if the rig is located in a shallow area,” Alkhateeb says.

Some of the rigs are restricted and a dynamic positioning system is required to allow the boat to stand by the rigs without dropping anchor, which involves high technology.

After a boat is loaded, it will cast off and proceed to the rig location within the time frame and the rig foreman and rig staff will pick up the materials.

“If you compare this new project with the old method used, it is much more efficient,” says Alkhateeb. “With the



Marine Logistic planners Muqbil Al-Shammari and Bander Al-Mansour track supply vessels carrying cargo to drilling rigs.

old model, the rig itself used to have two boats and the rig foreman would send his boat to load the materials and then return again. Most of the time the two boats would be standing by and would not be utilized. This cost the company a lot of money because of the boats being underutilized.”

“MILK RUN” CONCEPT

The new model was implemented to overcome this problem. It uses a “milk run” concept whereby the Marine Department takes control of all of the boats and arranges them according to the concept.

“We now can have different materials for different rigs on one boat and the boat casts off to deliver to the first rig, second rig and third rig. In this way, we are utilizing less boats to deliver materials. This is more efficient,” says Alkhateeb.

“Tanajib Pier is less congested and we save fuel with this model. At the start of the project we had almost 100 vessels and when we applied this new concept and model it was reduced to 80 boats. This represents a huge cost saving.

“It is a really intense operation, and very complex. It requires lots of effort, both in planning and logistics.

“It has developed me, personally, a lot. I have had to monitor people and situations and communicate with different departments, such as the Producing Department, the Drilling Department, the rig foremen and the Marine Department itself.

“We also work with the contractors who are dealing with the boats. Lots of parties are engaged in this operation. We have to utilize teamwork and everyone here has to be working in the one direction. Collaboration, cooperation and time management are essential to making this work.”

This important feature of the “milk run” delivers best-in-class customer service, increases a vessel’s utilization, and reduces a vessel’s turnaround time in port.

GAS OPERATIONS

The project started as a pilot with Manifa rigs and was later expanded to include rigs at other fields, such as Zuluf, Murjan and Safaniyah. Also to be included are the Abu Sa'fah and Berri fields. Gas operations will form the bulk of the final phase due to the critical nature of operations.

The idea of the Hub was conceived due to the unprecedented growth of upstream activities, evolving operational complexities and the expansion of operating areas. An entirely different mode of operation was sought, which would provide dynamic means to meet upstream growth, drive efficiency to, and beyond, international standards and develop processes to mitigate risks associated with offshore drilling activities.

There was a necessity to transform the supply model for gas fields as well. The drive for change were similar to those of the oil fields. This was due to the fact that the supply model for gas rigs before the Hub was introduced sought to dedicate a ratio of approximately four vessels per gas rig, whereas the introduction of the Hub is expected to further optimize the existing fleet by approximately 50%.

While the introduction of an unparalleled and unique

asset like the Hub to Saudi Aramco offshore operations is a tremendous achievement, the development and integration of the young Saudi workforce to operate such an asset is also worthy of recognition.

The company's future is in our youth and Saudi Aramco seeks to ensure that they have the right tools and training to meet the challenges — both for the benefit of Saudi Aramco and the Kingdom at large.

ALL IN A DAY'S WORK FOR SAUDI YOUNG TALENT

Without the hard work and innovation of young Saudi talent and others, the deployment of the new Marine Offshore Floating Hub in Tanajib could not have been accomplished.

Here's what a few young Saudis had to say about the project and their role in its success.

SULTAN S. AL GHAMDI, *planner, age 26*

"I work as a planner preparing boats that are loading the cargo for rigs, depending on their requirements.

"We arrange the boat and we plan to put the cargo in the particular boat for the rig, because each rig has different requirements. Some rigs need a deep boat. That means that the boat can hold position by itself without dropping anchor. We assign the boats, depending on the weather, the location of the rigs, the deck space of the boats and the requirement quantities.

"Things are managed better with the Hub and we can also deliver over a short time frame — instead of eight to 10 hours, we can deliver in 90 minutes. We keep the Hub as a storage area, which is the same as the pier area here, except it is offshore. Also, we always top up the Hub.

"We have a senior planner in each group. We try to plan in detail if we have something complicated, and the senior planner will advise us. All of the planners have worked on each shift and we discuss together, for example, if we need to get a boat from another zone to assist us.

"The senior planner also approves every step that we take. The senior planners and other planners support us. It's very much a matter of teamwork. We live here as a family, we assist each other and every day we learn a new lesson."

BANDER AL-MANSOUR, *shipper, age 23*

"I started here as a loadmaster — it was a little hard because it was the first time we experienced this. Now we find it easier and

TOP LEFT TO BOTTOM RIGHT:
Sultan S. Al Ghamdi, Bander Al-
Mansour and Muqbil Al Shamhari



all of our colleagues in the Drilling tool house are very cooperative. After approximately one year, I moved on to start work as a shipper.

“We receive cargo from the planners and when that is finished we make sure that the boat is alongside the station, which we see through the live line on screens. Then we proceed to the rig’s receiving area and confirm the availability of all of the cargo and consult the Drilling tool house to approve the material, and then we send it direct to the boat loading station.

“It has all been a good experience and we are coordinating with many companies from around the world. Everything depends on collaboration and cooperation and that’s what everyone does here.”

MUQBIL AL SHAMMARI, *loadmaster, age 24*

“I started here in September 2013. I have gained a lot of experience with this unit. I feel that my customer care skills have improved a lot and I have developed a lot in other areas. My experience and development has accelerated since I have been here.

“My job starts when I receive the load plans from the shipper. I plan for the station for the particular vessel and I make sure that the vessel is ready to load and the captain is informed, and that we have a copy of the load plan so we can prepare his vessel.

“After the cargo arrives at the station, I have to cross-check the load plan against the cargo that is present at the station to make sure that there is no missing cargo or unsafe cargo to load.

“When we start loading, we have to make sure that the vehicles and the people at the station are fully safe and wearing their full Personal Protection Equipment. After the loading is complete, we cross-check the cargo again with Drilling to verify it and issue the shipping manifest to the tool house and hand over the ship manifest to the dispatcher so that he can instruct the vessel to cast off and travel to its location.

“As a unit, and as individual groups, we all work as one team.”

SULTAN M. AL QAHTANI, *dispatcher/ sea bus coordinator, age 24*

“I have been with Marine Logistics for three years, since the beginning of this project. I have been with the Marine Department for four years and Saudi Aramco five years.

“A dispatcher’s main duties involve monitoring the vessels’ movement in the field. We have a dashboard, which is updated and we make sure that for each vessel here in Tanajib, the loading operation takes only 7.5 to 10 hours.

“We immediately contact a senior planner to inform him about things and he will accept the vessel operation. The dashboard needs to be updated constantly with the



ABOVE, LEFT TO RIGHT: Sultan M. Al Qahtani and Saleh A. Al Ghamdi

vessel numbers, times, and the monitoring of the vessels’ movement in the field.

“With the sea bus service, it’s a new service here, as we take over from the Aviation Department the transportation of more than 50% of rig crew changes at the Marjan, Zuluf, and Safaniyah oil fields. We have two taxi boats and we escort them to the station.

“There is a lot of responsibility and a lot of teamwork. We make sure that we all work together and work for our customers. We work for our customers’ satisfaction.”

SALEH A. AL GHAMDI, *shipper/planner, age 25*

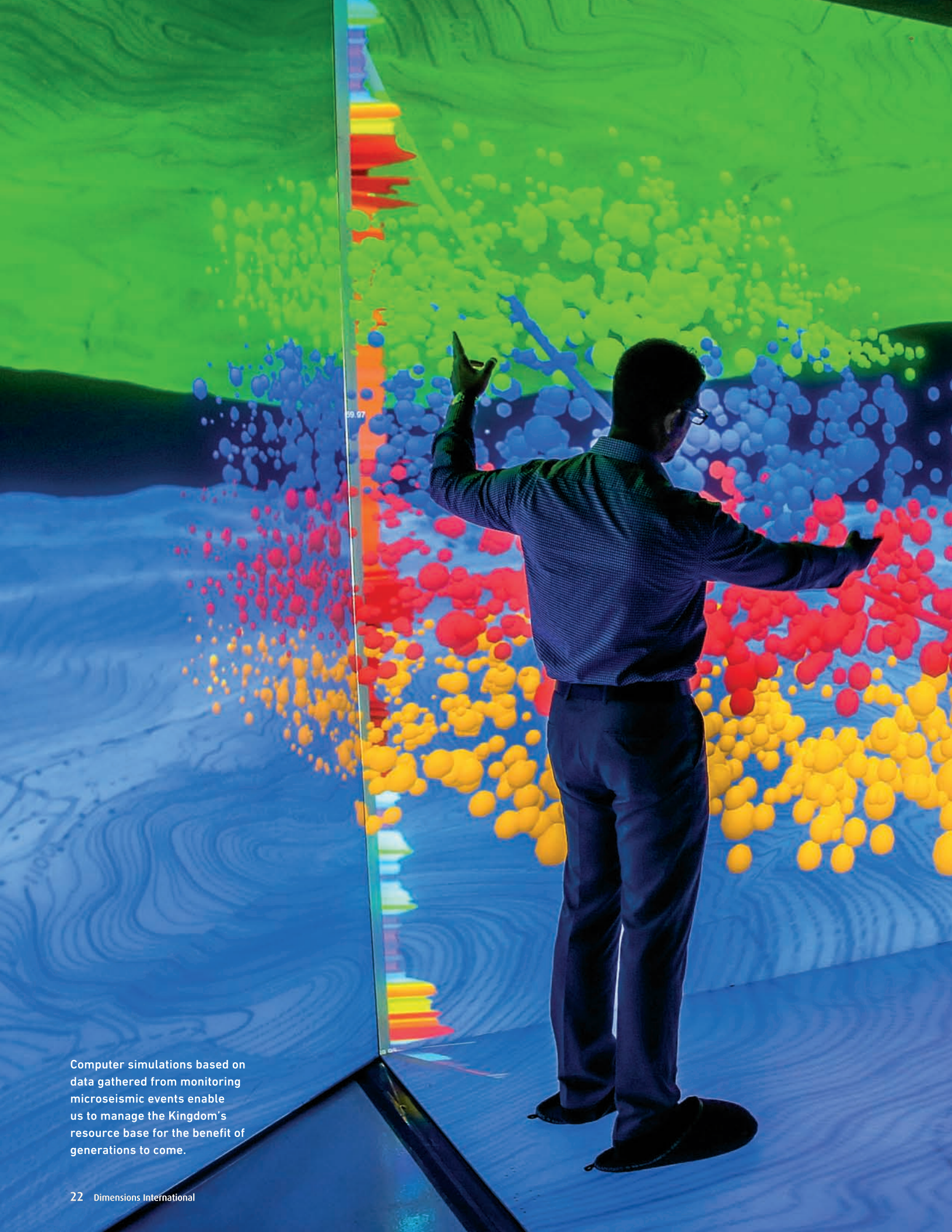
“I used to work with Logistics; I was there for two years and I started as a loadmaster. We dealt with the cargo that would be loaded from the station at the Tanajib pier. I would verify and make sure that everything was correct and prepare the shipment and the ship manifest. This would then be delivered back to the planner.

“After we locate the materials, we arrange the transportation to deliver the cargo from its staging area to the receiving station. I am now a trainee planner. There are many challenges. We have to verify everything to make sure that all of the equipment is correct and that nothing is missed because if there are any missed items we would be responsible for any shutdown of the rigs.

“For the shipper, the main challenge is to locate the material and deliver it to the station on time.

“For the planner, the main challenge is the specific communication between three parties, which are the contractors, the rigs, and also the people from Drilling.

“I have learned a lot about teamwork and working under pressure and have also enhanced my communication skills — both my writing ability and improving my English.” ☎



Computer simulations based on data gathered from monitoring microseismic events enable us to manage the Kingdom's resource base for the benefit of generations to come.

ENERGY IS OPPORTUNITY

2015 Annual Review
documents a year of
withstanding adversity,
overcoming challenges

BY KYLE L. PAKKA



Despite the low oil price environment in 2015, Saudi Aramco delivered another record year of crude oil and gas production, while also making significant progress in our continued domestic and international downstream expansion.

That theme of overcoming challenges and seizing opportunities is at the core of this year's *Annual Review*. Titled "Through Our Work We Define Opportunity," the *Annual Review* is the company's flagship publication for details on consolidating our position as the world's most reliable supplier of energy and our progress toward becoming the world's leading global integrated energy and chemicals company.

Saudi Aramco produced an average of 10.2 million barrels per day (bpd) of crude oil in 2015, an all-time record. Total raw gas processing averaged 11.6 billion standard cubic feet per day (Bscfd),

also an all-time record. Saudi Aramco's share of refining capacity stood at 3.1 million bpd. In addition, with new refineries going online, exports of petroleum products increased by 38%.

This year was a particularly challenging one for our industry. But for more than 80 years, Saudi Aramco has not only withstood adversity — we have grown stronger as a result. Strategic decisions made over the past few years, including a corporate transformation founded on capital efficiency, innovation, operational excellence, and downstream integration, have placed the company in a position of strength to face these

Our refinery under construction in Jazan will form the industrial heart of the greater Jazan Economic City, helping drive sustainable economic growth in the region.

challenges. The positive results of these strategic decisions are reflected in the company's achievements.

The successes highlighted in the *Annual Review* reflect our unwavering dedication to become the world's leading integrated energy and chemicals company.

Collectively, we responded to the unsettled business climate on numerous fronts, optimizing capital expenditures, deferring low-priority projects, and lowering our direct controllable costs — without diminishing our determination to deliver on our strategic vision.

Upstream: sustaining excellence

Every day, products made from our resources enable people across the globe to live more productive lives. From fuels and lubricants to performance

textiles and advanced plastics, it all starts with our resource base. Managing these resources for the long term requires sustained excellence in every aspect of our upstream operations.

Our pursuit of unconventional gas continued to gather momentum as we invested considerable resources to find and produce gas from shale and tight gas formations. Growing gas production enables us to deliver additional volumes of gas as fuel and feedstock for domestic industries, driving economic growth and diversification.

Our ability to increase supplies of natural gas to reduce the Kingdom's reliance on liquid fuel for electricity generation and to power seawater desalination plants is vital for the country's continued prosperity. To meet this challenge, we plan to nearly double our supply of gas over the coming decade to more than 20 Bscfd.

Downstream: maximizing value

We significantly expanded our refining and chemicals capabilities within the

Kingdom, helping to diversify the Kingdom's economy, providing high-quality job opportunities for Saudis, and reinforcing our commitment to generate maximum value from the Kingdom's hydrocarbon resources.

The Sadara Chemical Company, the world's largest chemicals complex built in a single phase, is on track for full production by early 2017, featuring a mixed feed cracking unit capable of processing 85 million scfd of ethane and 53,000 bpd of naphtha as feedstock to produce 3 million tons of performance plastics and high-value chemicals per year.

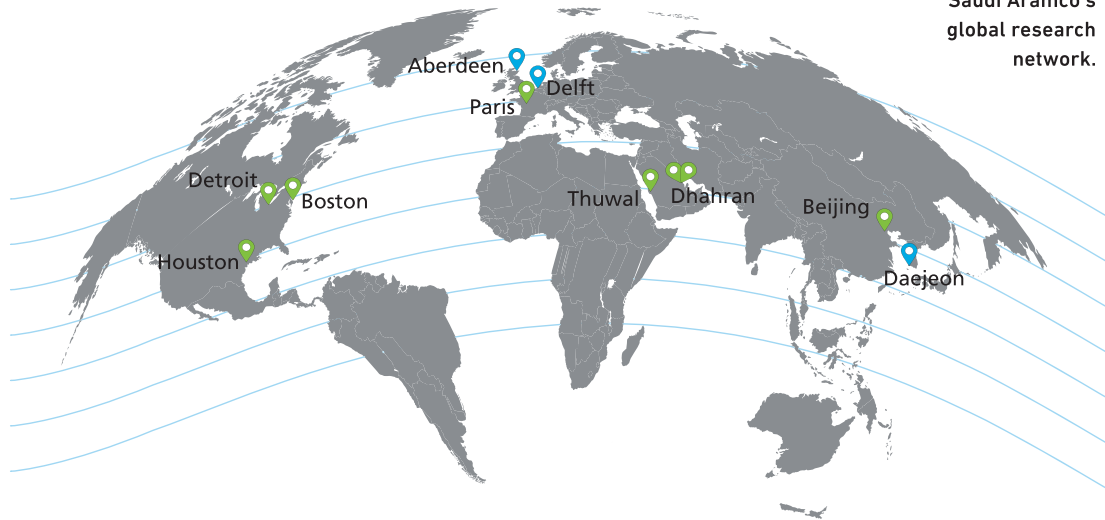
Construction of our wholly owned Jazan Refinery and Terminal in the Kingdom's southwest continued steadily in 2015. The 400,000 bpd refinery and terminal facilities are the industrial heart of the government's greater Jazan Economic City project.

Our integrated refining and petrochemical venture with Sumitomo Chemical of Japan, the Rabigh Refin-



Our In-Kingdom Total Value Add program positions local content at the heart of our procurement process and will spur the growth of new jobs.

📍 research center 📍 technology office



Saudi Aramco's
global research
network.

2015 to create a new 50-50 joint venture company. ARLANXEO will develop, produce, market, sell, and distribute performance polymers used by global tire and auto parts manufacturers.

Technology

Sustained investment in technology — particularly in today's challenging business climate — is a key enabler

of our company's long-term resilience. Our approach is steadily building results. For example, during 2015, we were granted a company record number of patents — 123 — by the United States Patent and Trademark Office.

Strategically located in technology hubs in key energy markets, our Global

ing and Petrochemical Company (Petro Rabigh), is currently being expanded in a second phase that will increase the production capacity of the ethane cracker, add a new world-scale aromatics

complex, and create 22 process plants.

Our affiliate, Aramco Overseas Company B.V., and LANXESS, a German specialty chemicals company, signed a binding agreement in September

Our participation in integrated refining, chemicals, and marketing companies in the Far East allows us to traverse the entire value chain, adding value at every step.



Research Network provides an environment for innovation to flourish and underscores our drive to achieve global leadership in energy-related technologies. In 2015, we expanded our network with the opening of new research centers in Beijing and Houston.

Health, safety, and environment

We believe the health and safety of our people and the preservation of the natural environment provide a foundation for future progress and development.

We believe technology solutions offer the key to protecting and preserving the environment while sustaining the benefits to be derived from hydrocarbon resources. In a major milestone, we launched a pilot program to capture carbon dioxide and inject it underground to enhance oil recovery.

Globally, we support the efforts of the Oil and Gas Climate Initiative, a collaborative effort that seeks to spur practical action in areas such as the role of natural gas and greenhouse gas reduction. At the United Nation's Climate Change Conference, the 21st Conference of the Parties (COP21), we exhibited elements from our portfolio of greenhouse gas management technologies, including onboard mobile carbon capture and research into more efficient engines.

Enabling opportunities

As steward of the nation's energy resources, we support the nation's commitment to a sustainable energy economy by championing best practices in conservation and efficiency.

In 2015, we continued making progress toward becoming self-sufficient in meeting our own needs for electricity while also increasing energy efficiency. We completed a program to replace more than half a million incandescent lights with efficient LED bulbs and installed 8,000 LED street lights in company communities. Annual energy savings from the LED lights installed so far are estimated to exceed 42 gigawatt hours — equal to saving more than 80,000 barrels of oil equivalent per year.

In December, we launched our In-Kingdom Total Value Add program,

designed to position local content at the heart of our procurement process. The program's goal is to double the production of locally manufactured energy-related goods and services contracted by Saudi Aramco to 70% by 2021.

Human resources

Delivering on our strategic intent requires more than investments in technology and capital projects — most importantly, it requires investments in people. To ensure we meet our aspirations, we emphasize continuous development and skill building to drive performance through a wealth of courses, training centers, internships, and mentorship programs. In 2015, our workforce grew to another all-time high of 65,266.

Citizenship: inspiring tomorrow

We believe that by engaging with local communities across a spectrum of shared values, we aid the growth of sustainable and dynamic societies. This belief is backed by our support of beneficial citizenship programs and initiatives and by the volunteer efforts of our people, inspiring brighter futures here in the Kingdom and around the world.

The King Abdulaziz Center for World Culture — our flagship initiative for engaging the nation's youth — will join the collection of institutions in the Kingdom dedicated to knowledge and creativity. A suite of outreach programs under the umbrella of iThra Youth has reached more than 200,000 students and teachers across Saudi Arabia, providing interactive sessions to enrich science, technology, engineering, and mathematics skills and encourage reading.

It has been an extraordinarily challenging year, but one filled with equally extraordinary accomplishments made possible by the resolve and ingenuity of our people. The success we achieved attests to the leadership and resiliency we, as a company, have always demonstrated in times of adversity.

Saudi Aramco's 2015 *Annual Review* is available in English at www.saudiaramco.com/CR and in Arabic at www.saudiaramco.com/CR-Arabic. 🌐

7.1

MILLION BPD

is the amount of crude oil exported by the company in 2015.

11.6

BSCFD

is the amount of raw gas processed in 2015, the highest level ever for Saudi Aramco.

3.1

MILLION BPD

is the company's share of refining capacity worldwide.

65,266

is the company's manpower in 2015, the highest level ever, up from 61,907 in 2014.

7,016

KILOTONS PER YEAR

is the company's total equity chemicals production capacity for 2015.

abbrev.

Saudi Aramco news in brief



AAPG President John R. Hogg (second from left) was on hand to congratulate the award winners, including (left to right) Sa'id Hajri, manager of Exploration Technical Services; Hussain M. Al-Otaibi, manager of Exploration Resource Assessment; and Abdulkader M. Afifi, Red Sea Exploration Department.

Aramco geoscientists receive top awards at AAPG conference

DHAHRAN, SAUDI ARABIA — A trio of prestigious awards for Saudi Aramco geoscientists provided a strong start for the company's participation in the 2016 Annual Convention and Exhibition of the American Association of Petroleum Geologists (AAPG). The annual event took place in Calgary, Canada earlier this year.

Hussain M. Al-Otaibi, manager of Exploration Resource Assessment, was recognized with AAPG's Honorary Member Award for distinguished service and devotion to the science and profession of petroleum geology and AAPG. Abdulkader M. Afifi, Red Sea Exploration Department, received an AAPG Distinguished Service Award for two decades of continuous service to the AAPG and its

Middle East Region, and for his lifelong dedication to the science and profession of geology.

Sa'id Hajri, manager of Exploration Technical Services, received AAPG's Distinguished Service Award for sustained contributions to petroleum geoscience, leadership and outreach to future geoscientists who promote the globalization, diversity and success of AAPG.

Drilling into the future

DHAHRAN, SAUDI ARABIA — A dynamic new project, the Saudi Arabian Drilling Academy

(SADA), has officially been launched.

The goal set by its directors and stakeholders is to develop SADA as a training hub to serve the drilling and workover industry in the region.

The project goes back to early 2015 when the Drilling and Workover (D&WO) Admin Area initiated the concept and a countrywide feasibility study. The study found that over the next 20 years, approximately 90,000 Saudis will need to be trained to meet the industry's growth plans in the Kingdom.

SADA is going to build up to training more than 4,000 Saudi nationals a year. This initiative will result in a marked increase in Saudization levels in the drilling industry across all technical job ranks.

One of SADA's key strengths is going to be the wide range of training programs offered to drilling companies. There are already training programs and patterns proposed to not only train young high school graduates, but to also offer continuous development programs to junior operators and technicians, which will allow them to progress with their careers all the way into senior roles.

Aramco Asia, Tsinghua University cement ties

BEIJING, CHINA — An Aramco Asia delegation headed by Aramco Asia president and CEO Nabil Al-Nuaim, recently visited the

The Saudi Arabian Drilling Academy, a new drilling training hub, is set to change the face of the drilling and workover industry in the region.





Nabil Al-Nuaim, Aramco Asia president and CEO, with Qiu Yong, president of Tsinghua University.

prestigious Tsinghua University in Beijing to enhance collaboration between Aramco Asia and the esteemed academia of China.

Al-Nuaim, accompanied by Beijing Research Center acting director Dr. Han Ming, Public Affairs director Waleed Helal, and Academic Program manager Faisal Othman, were warmly welcomed by Qiu Yong, president of Tsinghua University.

Al-Nuaim spoke on the placement of Saudi Aramco students in Tsinghua University, and further explored ways to deepen the scientific and academic exchange between the two organizations.

"I am hoping to see as many Saudi Aramco students as possible, attending Tsinghua academic and research programs, knowing that the high-quality programs will, at the end, bring about leaders and executives of global posture."

Fulfilling a training mission: Crane and Heavy Equipment Training Center launches

JAZAN, SAUDI ARABIA — In keeping with our commitment to rejuvenate the Jazan area, Saudi Aramco, in coordination with the General Organization for Technical and Vocational Training (GOTEVOT), recently inaugurated the Crane and Heavy Equipment Training Center.

Located in the Jazan Economic City, the new center brings to four the number of centers that form the Jazan Contractors Consortium for Training and Employment (Maharat), with the other three based in al-Darb, Abu Arish and al-Haqu.

Maharat's objective is to provide high-quality training to 5,000 young Saudi high school and technical and industrial institute graduates, qualifying them for construction jobs such as carpentry, plumbing, pipe fitting, welding, electrical work, and operation of cranes and heavy equipment.

Graduates will be assigned construction jobs in Jazan's terminal and refinery projects after passing the training program. So far, 994 trainees have graduated from these centers, with 600 trainees expected to graduate this year.

Dhahran Primary Care Pharmacy; new robotic medication dispensing systems

DHAHRAN, SAUDI ARABIA — Johns Hopkins Aramco Healthcare (JHAH) recently welcomed the first patients to its new primary care pharmacy — the first in the GCC region to integrate two advanced robotic medication dispensing

systems (and only the second outside of the U.S.).

Extended waiting times, crowded space, and the transactional exchange between pharmacist and patient have been swept away as the new pharmacy offers a welcoming environment with an individual consultation for each patient.

The location is designed to provide a tranquil, healing atmosphere and includes 13 seated consultation cubicles. It is here

Two new advanced robotic medication dispensing systems in place at Johns Hopkins Aramco Healthcare's Dhahran Primary Care Pharmacy have maximized efficiency, minimized human error, and enabled pharmacists to improve their clinical effectiveness.



that the pharmacist spends time discussing medications with the patient.

Meanwhile, the robotic system prepares, packages and labels the prescriptions, which are delivered by a conveyor mechanism directly to the cubicle. This results in minimal wait times and maximum attention to

patient needs and clinical outcomes.

The system is designed to maximize efficiency, minimize human error, and enable pharmacists to improve their clinical effectiveness. 🌐

Crane operations is just one of the many crucial skills that are part of the trainees' practicum. Here, a group of trainees pose with a trainer.



worldview



Arabian red fox

During one of his weekend trips to the Al-Wasea area in Saudi Arabia (approximately 200 kilometers west of 'Udhailiyah), Iain Gow discovered several foxholes. In early January, he noticed the female fox (vixen) again in the same area. Gow said, "Keeping a good distance away, it was quite happy to meander among the rocks, possibly trying to steer me away from the active den it was using. After a few minutes, the vixen curled up on some soft sand and just stared at me, allowing me to take many photographs. It would even put its head on the sand and close its eyes knowing I was not a threat.

"By April, I noticed an area near one of several foxholes that was covered in small paw prints so I positioned my Trailcam in front of a rock and left it overnight. The next morning, I returned to find it had taken many videos of fox cubs during the night. By May, they were out playing and exploring after sunrise, giving me the chance to take still color photographs of them."

Gow used a Nikon Coolpix P600 camera to capture the image. He lives and works at Pump Station No. 3 as a technical advisor at the East-West Pipelines Department. Gow has worked with the company for 27 years.