

the arabian sun

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a weekly Aramco publication for employees

in this issue

Clean fuels project puts Kingdom environment first

The Ras Tanura Refinery adds another successful milestone, completing the Ultra-Low Sulfur Diesel system.

see page 10

Offshore Projects develop new shutdown system

The Offshore Projects Department has developed a new oil platform emergency shutdown system to reduce production stoppage time.

see page 5

Ithra's new virtual COVID-19 Exhibit

The King Abdulaziz Center for World Culture (Ithra) marks the one-year anniversary of the COVID-19 lockdown with the launch of a virtual showcase titled "COVID-19 Exhibit."

see page 2



Collaboration and innovation take center stage at leading industry conference

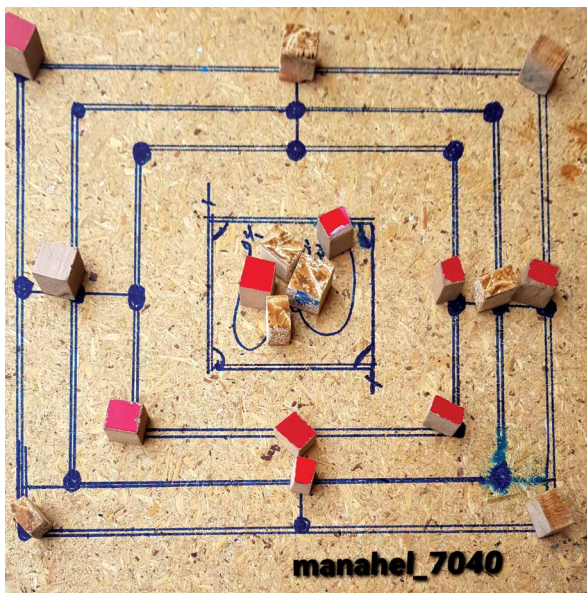
see page 3



At the IPTC conference, Aramco senior leadership spoke on the industry's need to reduce the carbon footprint of oil and gas, as well as talking on innovation and technology. At left, Aramco's capture and reinjection project, which the company commenced in 2015 to annually inject carbon dioxide into the world's largest oil field, Ghawar. Center, the company's LAB 7 will be a hub of innovation for world-class ideas. At right, earlier this year, Aramco inaugurated Dammam-7, a new Upstream supercomputer with a capability of 55.4 petaflops and is considered among the top 10 supercomputers in the world.

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Ithra's COVID-19 Exhibit connects the world through shared experiences

The King Abdulaziz Center for World Culture (Ithra) is marking the one-year anniversary of the COVID-19 lockdown with the launch of a virtual showcase titled "COVID-19 Exhibit." A display of mementos tied to an unexpected cultural and social reset that resonated across borders, cultures, and languages, the exhibition is a collection of thoughts, memories and reflections on the pandemic experience by people from across the globe.

"A year into the global health crisis, the COVID-19 Exhibit is an opportunity for the global community to reflect on this complicated and difficult time and tell our pandemic stories," said Ithra curator and head of Ithra museum, Farah S. Abushulaih.

"Art is about connecting people through culture, but we connect maybe even more easily through common objects."

Hundreds of submissions

The exhibition is the result of an open call to art enthusiasts around the world. It received hundreds of submissions, from which a collection of 270 pieces has been curated. The COVID-19 Exhibit highlights our shared feelings and experiences during lockdown — an ordeal that transcends language, cultures, and borders.

The collection finds common ground in the diverse sentimental and significant objects that helped people worldwide cope in a time of change. Recurring themes emphasize our unity through the similarity of our experiences, and range from lockdowns, social distancing, masks, and working from home to supporting medical heroes and front-line workers. The objects include everyday items as well as instruments, photos, notes, and artwork — both old and new.

Ithra received exhibits from the Kingdom of Saudi Arabia, the United

Arab Emirates, and Bahrain, with additional submissions from Australia, Malaysia, Germany, Egypt, Kuwait, Oman, Jordan, India, Sudan, Bangladesh, the Philippines, Pakistan, the U.K., and the U.S.

Personal stories

Through telling personal COVID-19 stories, the COVID-19 Exhibit provides a universal snapshot of how humanity has dealt with and continues to grapple with what has become our new reality, amid a unique moment of global solidarity. The exhibition puts the effects of the coronavirus on ourselves and our relationships with objects into perspective, while also connecting cultures and creating dialogue through international participation.

The COVID-19 Exhibit will run for two years beginning March 28, 2021. To view it and for more information on Ithra and its programs, visit www.ithra.com.



Your voice

A radical rethinking of the idea of home



Eyad Buhlaiqah
Dhahran

Eyad.Buhlaiqah@aramco.com

Your Voice reflects the thoughts and opinions of the writer, and not necessarily those of the publication.

Inspired by the recent announcement of the futuristic, zero carbon, smart city called "The Line" at NEOM by His Royal Highness Crown Prince Mohammed bin Salman, I, like many others, was astonished by the revolutionary concept of urban space. As NEOM is the land of dreamers, I've been dreaming about a new way of living, where the relationship between humans and urban spaces is being redefined.

Coming from a software development background and a cloud computing world that focuses on reusability and maximizing the use of resources by providing multitenant infrastructure-as-a-service, it is envisaged that work-life balance will be improved significantly by adopting a housing-as-a-service concept.

The concept of co-living and co-working could be established by helping inhabitants, who share work and domes-

tic facilities, to maximize efficient use of landscape by minimizing underutilized office and residential building space.

Sharing the cost of living

In other words, instead of renting a whole flat with many rooms and facilities, tenants would select the minimum required services (e.g., bedroom, bathroom, etc.) and share other facilities and appliances (e.g., office space, gym, cinema, storage, laundry, games rooms, etc.), that are mostly underutilized, and pay on a per-use basis. Duality of ownership and usage helps in reducing the total cost of ownership by moving houses from being a commodity to services, allowing for shared costs of acquisition, operation, and maintenance.

It would improve community safety and security, reduce the need of external human resources and helpers, and decrease

material possessions without impacting the quality of life.

Most importantly, housing-as-a-service would allow for sharing without compromising convenience, increasing bonding and interaction within a community that is built around nature and not roads. It would also make it financially affordable. In addition, this would help in reducing landscapes needed, allowing for making all required facilities, including workspaces, to be within a 5-minute walking distance. This increases the walkability in the city, and thereby improve the health of all society. This, of course, is magnified with the vision of having the city with zero cars and full reliance on renewable energy.

Our kids are having a better future, thanks to the visionaries of our country, and to HRH, for making dreams become reality!

Collaboration and innovation take center stage at leading industry conference

Upstream Business Line Head, Nasir K. Al-Naimi, expresses the company's commitment to continually transforming to keep pace with the digital age at the 2021 International Petroleum Technology Conference

By Eamonn Houston

Nasir K. Al-Naimi spoke at the 13th edition of the International Petroleum Technology Conference (IPTC), a flagship energy industry technology conference taking place virtually in Kuala Lumpur, Malaysia.

During the IPTC Executive Insight interview, Al-Naimi spoke about trends in the future energy mix, articulating the fact that existing energy in the form of oil and gas will continue to play a pivotal role alongside "new energy" sources for the foreseeable future.

"Looking at renewables," Al-Naimi said, "solar and wind together account for only 10% of global electricity generation. And, if we look at the world's total primary energy consumption, they are just a little over 2% of it."

"The existing and new energy will continue to run in parallel for a long time to come."

Al-Naimi addressed current industry challenges, such as the impact of the



"Technology is an integral component of our drive to develop breakthrough solutions that yield economic benefits to support a sustainable energy supply. We have created a portfolio of technological solutions that enable us to meet our customers' needs more efficiently."

Earlier this year, Aramco inaugurated Dammam-7, a new Upstream supercomputer with a capability of 55.4 petaflops and is considered among the top 10 supercomputers in the world.

"Our growing computing resources and a tremendous wealth of data enable an artificial intelligence ecosystem that is game changing in scope," Al-Naimi said.

"A breathtaking glimpse of the future can be seen at Khurais, where we have deployed some 40,000 sensors covering over 500 oil wells, becoming one of the world's largest intelligent oil fields."

Our people

Al-Naimi emphasized that the continued development of the company's workforce, and the diversity of its talent would be essential to achieving even greater success in the future.

"There is no question that our people are our greatest asset. So, we work very hard to leverage our training programs within a collaborative environment to provide opportunities for our young professionals to turn the company's vision for the future into reality," he said.

"Aramco is working on numerous fronts to position us securely for the future."



Watch Upstream Business Line Head take part in the IPTC 2021.

global COVID-19 pandemic and the importance of addressing climate concerns. He also discussed the central role that technologies and employees play in fostering a culture of innovation and collaboration.

Groundbreaking technologies

Al-Naimi added that the industry must continue to focus on reducing the carbon footprint of oil and gas and that groundbreaking technologies, innovation and collaboration between oil and gas companies and the new energy sector would ensure global energy security and reliability.

According to Al-Naimi, Aramco's environment, social, and governance efforts began around half a century ago, and pointed to the building of the Master Gas System in Saudi Arabia as an example.

IPTC 2021: Day 6 Summary (3/30/21)	
Field	Number
Aramco Booth Views and Visits	4,200+
Content Downloads	230+
Booth Video Views	300+
Inquiries Received	15+
Business Cards Dropped	100
Booth Seminar Visits	65
Surveys Completed*	60

*Over 95% of visitors are satisfied with the Aramco booth

Aramco's carbon intensity during production is among the lowest in the world, he noted, alongside methane intensity — one of the lowest in the industry.

The company has also developed strategic partnerships across various industries to develop groundbreaking technologies. Aramco is currently working with automakers to develop advanced clean fuel engines.

Aramco has actively focused on lowering carbon dioxide emissions through the deployment of carbon capture, utilization and storage technologies. The company has also identified hydrogen to be transported as blue ammonia as an area of huge potential growth.

Technology focus

"The importance of cutting-edge technology cannot be overstated," Al-Naimi stressed.



Watch "We reliably supply the world with energy."

Aramco to host IPTC 2022 in Dhahran



Aramco will host the 2022 flagship conference in Dhahran.

Accepting the transfer of the IPTC official flag, marking the next venue for the conference, AbdulHameed A. Al Rushaid, vice president of Petroleum Engineering and Development, said, "It is truly remarkable to see how the industry is coming together, despite the global conditions caused by COVID-19. These past nine days of the conference are a testament to the ability to create opportunities for the industry as it continues to transform and shape the future."

"IPTC 2022 will venture into the energy sector's resilience, technology co-advancement, sustainability, and the ecosystem evolution beyond these difficult and challenging times."

"We hope by then, the world will have emerged from the global pandemic," Al Rushaid said.

Al Ashgar flags Aramco's forward thinking strategy

During a panel discussion titled "Managing Transformation to Shape the Future of Energy," Samer S. Al Ashgar, general manager of Characterization and Field Development Geosciences, gave an overview of Aramco's drive in technological advancements.

He shared the platform with Firouz Asnan, senior vice president of Malaysian Petroleum Management for Petronas; Montri Rawanchaikul, president of PTT Exploration and Production; Maria Sferruzza, senior vice president of Baker Hughes Asia-Pacific; and Przemek Lupa, head of Asia-Pacific Development for Masdar.

"The new energy mix will evolve and grow, with hydrocarbons remaining a large part of that energy mix for many years ahead," Al Ashgar told the panel.

"While the future of energy is evolving, a constant is the fundamental investments in technology and innovation and investments in partnerships as well. We will also continue to make long-term investments in our



production capability.

"We move forward to increase productivity and performance and will be maximizing the benefits of digitalization and artificial intelligence. As we drive toward solutions, we will move in line with our responsibility to minimize emissions as well."

Meeting IKTVA and Mowaamah requirements

Company's largest bachelor camp ready for new residents

The company's largest ever remote bachelor camp is operating successfully near Jubail.

The 760,000-m² Fadhili Bachelor Camp (FBC) accommodates more than 2,500 employees working in the Northern Area Oil and Gas Operations at Fadhili, Wasit, and Khursaniyah.

The FBC was designed and constructed to meet *Mowaamah* requirements for accessibility. *Mowaamah*, run by the Ministry of Human Resources and Social Development, is an accreditation awarded to companies that provide suitable work surroundings for people with disabilities.

The camp includes 2,548 single-occupancy residential units, with 1,904 units for GC 3-10; 588 for GC 11-14, and 56 for GC 15+. The units are laid out over 13 buildings of two and three floors, with room sizes of 27 m², 34 m², and 65 m².

Comfortable facilities

Recreational facilities include a fully equipped gymnasium, games room, indoor basketball court, library, and a 50-person movie theater. The external facilities include a full-size all-weather soccer field, a 2.5-kilometer jogging track, two tennis courts, a volleyball court, and a 25-m eight lane swimming pool.

A grand mosque is located at the heart of the facility, and is flanked by a com-



munity center and a large reception hall. The community center includes dining facilities to accommodate 500 people, a commissary, barbershop, mailroom, and a multipurpose hall, in addition to office space to accommodate camp administration personnel.

The external landscaped areas were designed with a focus on sustainability, reduced water consumption, and environmental diversity.

The camp is supported by a 24-hour fire station and a 24-hour medical clinic administered by Johns Hopkins Aramco Healthcare.

On-time completion

Construction started in January 2018 and finished on Dec. 31, 2020, with the more than 2,800 workers surpassing 14 million safe man-hours to complete the project on time despite the COVID-19 pandemic.

The project was executed under the Community Services Projects Department and is administered by the Northern Area Community Services Department for the post-construction contract duration.

Faisal A. Hajji, executive director of Community Services (CS), said, "The FBC

demonstrates our enduring commitment to develop inclusive communities, which are vibrant, accessible, and environmentally sustainable, with a central focus on improved quality-of-life and employee well-being."

Mohammad A. Sultan, general manager of CS, said the project was "an excellent example of a value driven initiative leveraging private sector involvement in alignment with our corporate and strategic Vision 2030 objective."

IKTVA and Saudization

The project is the first to utilize a third-party Build Own Operate Transfer (BOOT) procurement concept through the Fadhili Field Housing Company, a joint venture between MASIC, a private real estate and investment company and Aramco in a first-ever partnership with a private sector real estate developer. The NESMA Group was chosen for engineering, procurement and construction work, and will manage the facility.

The project reached a 40% In-Kingdom Total Value Add (IKTVA) localization target designed to drive domestic value creation, and Saudization started at 16%, with a targeted rise to 45% of Saudi citizens employed at the camp by 2025.

Residents were accommodated over a four-week period from Jan. 1 without disrupting oil and gas operations.

Company increases asphalt production with new technology

The Ras Tanura Refinery (RTR) has successfully completed its asphalt production facility expansion, increasing the total production capacity to the equivalent of 42,000 barrels per day.

The project, which recorded 8.1 million safe man-hours without lost time injuries during construction and pre-commissioning phases, used three new technologies: an eco-friendly bitumen plant process, innovative concrete piling, and a groundbreaking de-watering system.

Refining and NGL Projects Department manager, Megbel A. Al Shamari, said, "The project added value to the RT Refinery through Biturox® technology, which is more efficient and reliable over the traditional asphalt production."

"We are always keen to execute our projects in accordance to the latest engineering and technology solutions."

Challenges

Salah A. Al Abdulhadi, the senior project engineer, said, "The project execution was extremely challenging due to brownfield, unforeseen underground utilities, and contaminated groundwater during excavations.

"The new plant is located in a very hazardous location, a congested area, which has limited access, and required the demolition of an existing moth-balled plant. However, with the team

spirit from the Project Management Team (PMT), contractor and refinery operations, we managed to overcome site challenges."

Technologies

The Biturox® process produces better quality asphalt from refinery feedstock components, enabling the refinery to produce bitumen from a wider range of crudes. It is a more efficient, reliable, economical, safe, and eco-friendly technology over the traditional asphalt process.

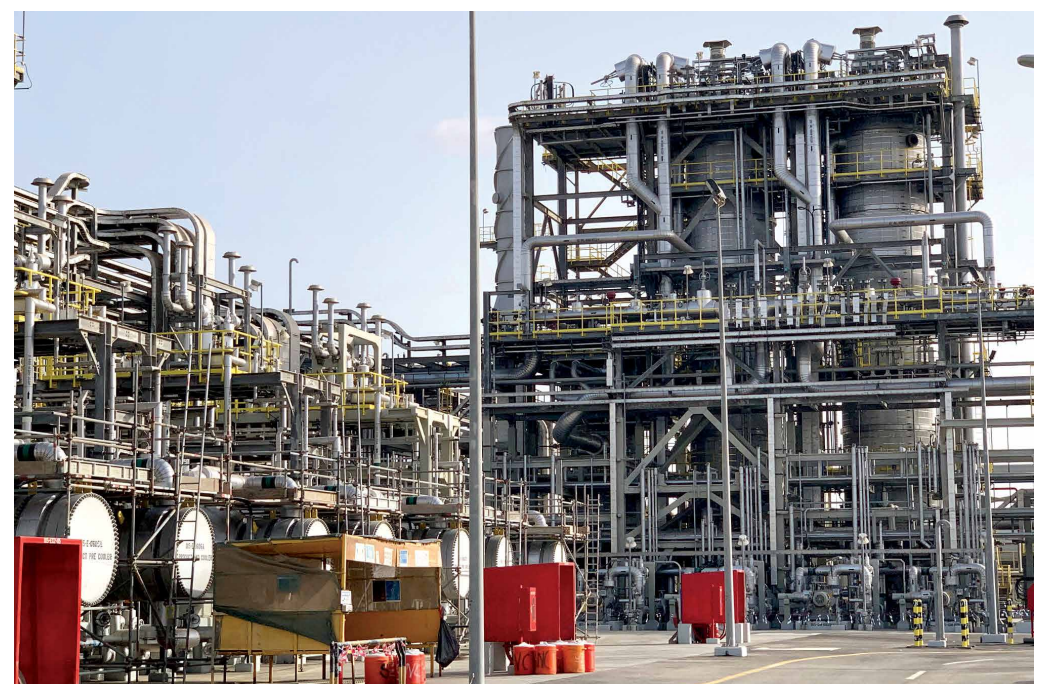
The PMT was able to reduce the concrete piling execution time to improve the soil, using new soil improvement technology called "Controlled Modulus Columns" (CMC) on the Consulting Service Department's (CSD) endorsement.

CMC is a substitute for the traditional bored piling foundation, resulting in a five-month schedule reduction and cost savings of 40%. CSD has recommended this technology for soil improvements in future projects.

Optimization

The PMT managed to optimize a de-watering system to avoid underground water contamination that significantly reduced the duration of early project civil works.

RTR is located near the shore of the Arabian Gulf where the water table is



The Biturox® process produces better quality asphalt from refinery feedstock components, enabling the refinery to produce bitumen from a wider range of crudes.

high and a majority of projects at the site are experiencing issues associated with de-watering activities during the construction phase.

The contractor installed four wells at depths of between 10 to 18 meters at each corner of the project and employed submersible pumps to discharge water away from the bottom of the wells. This reduced contaminated water to an acceptable level.

The PMT applied clever project management skills, innovative ideas, and op-

timized execution strategies to mitigate risks and construction challenges.

Achievement

The achievement of managing the brownfield construction challenges and implementing unique technologies to efficiently increase refinery asphalt production were made possible with the dedication and hard work of the PMT in collaboration with stakeholders.

The project scope facilities have now been handed over to RTR Operations.

Building and maintaining an effective risk culture

Few would argue against the importance of culture to the success of an organization's enterprise risk management process.

Identifying factors that make a strong risk culture and how it can be aligned with risk initiatives can be challenging.

As culture is an attitude or belief that is shared by people with a common purpose, the building of our risk culture is dependent on all of us having a common appreciation of risk management and a belief in its value.

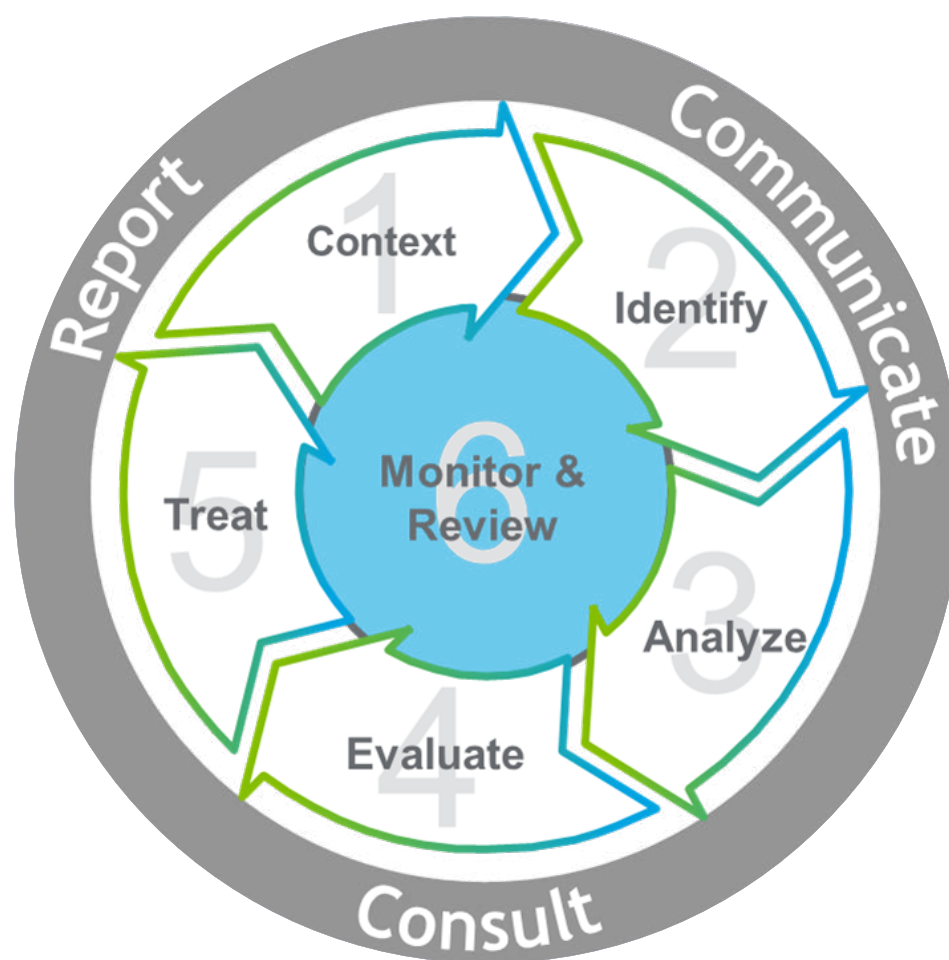
An effective risk culture allows risk management to be part of the fabric of an organization, rather than a compliance-based deliverable. After all, managing risks should be a primary goal of all employees throughout the company.

People conversations

So how do we build and maintain an effective Risk Culture?

We can start by encouraging people conversations about risk management across the organization. Only by openly sharing what we believe our risks are, will we afford the greater organization an opportunity to become part of the solution.

Make risk management an integral topic at your communication meetings, encourage discussion around the nature of risk in your business. Not only impacts, but also mitigation. Every con-



versation about risk is an opportunity to improve our collective response.

We all know that to achieve success requires taking some level of risk. Through empowerment, we encourage staff to take risks in support of our common objective, but only when such risk is appropriately controlled and monitored.

Encouraging collaboration

Taking risks is an integral part of business and empowering staff to take calculated risks should always be part of our culture.

Through collaboration, our capacity to collectively manage risk more effec-

tively will improve. Risk conversations across the organization should include collaborations with others, as the best solutions may well be outside of your span of control.

Multidisciplinary team engagements, as well as the sharing of data, business goals, and challenges will actively contribute to greater sharing of information and breaking down "silo" mentalities.

Sharing information

We need to be disciplined and clear in our thinking when making important business decisions. Good decision making requires that we have a full appreciation for the risks involved, the potential consequences as well as treatment plans to reduce any possible loss.

Risk is the management of uncertainty and uncertainty is reduced through information. Make sure that all your decisions are well informed.

Remember, if you are not managing your risks continuously, you are not managing your business.

Through greater people conversations, empowerment, collaboration and decision making, we look to build an effective Aramco risk culture underpinned by these critical behaviors.

Visit the Enterprise Risk Management (ERM) ShareK page for further points of reference @ ERM.

Reduces production stoppage time by up to 90%

Offshore Projects a wellhead of innovation with new shutdown system

The Offshore Projects Department (OPD) has developed a new oil platform emergency shutdown (ESD) system that reduces production stoppage time by up to 90%.

The portable system provides a temporary wellhead safety control panel for offshore platforms during construction of a permanent panel. The temporary panel controls the subsurface and surface safety valves of up to 12 individual wellheads simultaneously.

OPD successfully deployed the innovative system during the recent upgrade of 25 offshore platforms in the Zuluf oil field, approximately 40 kilometers off the Kingdom's northeast coast.

The system enabled continued production from the platforms in parallel with the construction activities, resulting in a reduction of the conventional 30-day shutdown duration per platform to just 3 days, leading to significant savings in production losses.

Abdulaziz F. Al Dulaijan, manager of the Offshore Projects Department, said the solution has been recognized for its innovative, operational convenience.

"OPD has successfully and reliably accomplished replacing obsolete ESD systems for several platforms while maintaining production, utilizing this temporary ESD system designed and developed in-house," Al Dulaijan said.

"This solution, which maintains production during construction, is appreciated by all involved organizations," he added.

"OPD is now looking to implement this solution on bigger scale projects and platforms, such as tie-in platforms and gas-oil separation plants, to minimize shutdowns in cases where permanent ESD system modifications or replacements are required."

The area remains committed in deploying best-in-class technologies and innovative solutions in projects execution with a focus on safe operations, schedule improvements, and cost optimization without operational interruption.

The successful deployment of a portable emergency shutdown system in the Zuluf oil field.



Jubah: an open-air museum where millennia are carved in rock

By Chiara Ciampricotti Iacoangeli

In January 1879, Lady Anne Blunt, the granddaughter of English poet Lord Byron, arrived with her husband Wilfrid at the Jubah oasis, more than two-thirds of the way across the Great Nafud Desert.

En route to the city of Hayil, they stopped at a way station for a rest. Lady Anne was interested in pur-

chasing Arabian horses, while Wilfrid was searching for examples of ancient inscriptions carved on stone outcrops.

They were among the very first Westerners to view the now famous rock art at Jubah. Lady Anne captured the setting and its rich array of ancient art in her comment, "Jubah is one of the most curious places in the world, and to my mind one of the most beautiful."

We can only agree with Lady Blunt. This open-air museum is a place where millennia are carved in rock. Our eyes are captivated at every step by new images, new writings, and new symbols. This immense representational wealth of art takes us back to a distant time in an overlap-



ping of eras and civilizations, which have left their marks.

A number one site

Today, Jubah is a small, quiet oasis town, located 90 km north of the city of Hayil, and is the most famous rock art site in Saudi Arabia. The oasis of Jubah is the remnant of an ancient lake, which was once rich in flora, wildlife, and people. The sand sea of the Nafud Desert is a windswept plain surrounding Jubah. At the foot of the mountains, Jabal Umm Sinman, an ar-



ray of rock art and inscriptions spanning millennia (with some carvings dating back 10,000 years) has been fenced off as an archaeological site by the Department of Antiquities.

Unlike other Neolithic paintings and etchings in other parts of the world, Jubah's rock art features deep incisions that display images in sharp relief and are in remarkably pristine condition. Images depict men and women, giving viewers a glimpse into the clothing and hairstyle of the past. The art also features animals, hunting scenes and weaponry, such as bows, arrows, sticks, and spears.

Aspects of the scenes show similarities with rock art in North Africa, including Algeria, Libya, and Egypt. Archaeologist Juris Zarins, who worked in the Jubah area for 20 years is quoted in *Saudi Aramco World* (Harrington 2002) as saying, "Pound for pound and piece for piece, in terms of rock art concentration and importance, Jubah is the number one or number two

site in the whole of the Middle East. It rivals anything in North Africa."

In this remote, solitary, silent area, dominated by a red desert in which rocky outcrops rise, the visitor is struck by the charm of the large number of petroglyphs created by a range of techniques with simple stone hammers. They are visually stunning expressions of human creative genius.

A king dispensing justice

Jubah is host to two of the most emblematic carvings in Saudi Arabia. The man in a hieratic pose wearing noble clothes and accessories in a dominant position over his subordinate allows himself to be interpreted as an ancient king handing out justice. The second one is a chariot pulled by two horses.

Jubah's rock art does not belong to a single era or a single civilization. Based on archaeological studies, three different eras have been identi-



fied: Recent, Thamudic, and Late Pre-historic.

The Recent petroglyphs are made of opaque engravings of Arabic scripts that were often carved with a metal object. The script often details a person's name with a date in the 1400s of the Hijri calendar, and the words were inscribed in the last 30 years. Some of the Arabic inscriptions are not dated and were pecked out using another stone, suggesting greater antiquity. Representations of mounted camels or battle scenes with people using lances to fight on horses can also be seen.



Ostriches, dogs, and ibex

Thamudic rock art is composed mainly of pecked out engravings and is dominated by inscriptions and representations of camels. The inscriptions are written vertically, although a few longer ones are written horizontally. The majority of engraved camels are associated with inscriptions specifying the owner of the animal. Other images are depictions of ostriches, dogs, ibex, and date palms. The palms may suggest cultivation.

Based on some archaeological studies, it has been suggested that the Thamudic society was transhumance, a regular movement of animals between areas of pasture. The association of the images with inscriptions suggests that such people were literate, most probably because

of contact with merchant traders.

During the Late Prehistoric era, the style of the petroglyphs were limited by the skills of the engravers and difficult rock surfaces, making it difficult to identify the species of animals depicted.

Most animals identified are ibex with huge sweptback horns, beards, and striped coats. Numerous cattle are depicted with their heads tilted to one side, so that both their horns and ears are visible. Wild asses are represented with what look like two short, forward-facing ears. The Late Prehistoric human figures found tend to be tall and elongated. They are male and appear to be wearing grass skirts and some kind of headdress. Two appear to be wielding hooked

implements, while another has a bow and arrow.

A UNESCO World Heritage site

In the largest rock shelter, which has a small cave at the back, there is a fourth type of rock art painted in red ochre. It is composed of three bov-ids, one possibly an aurochs — extinct large cattle. The ochre is in two different shades: a brownish red with which the animals are painted, and a purplish red with which squares and dots are painted.

The archaeological site of Jubah has been recognized as a UNESCO World Heritage site. Its importance lies in its testimony of a society long vanished, leaving behind an exceptionally detailed record of their existence.

Jubah's rock art features deep incisions that display images in sharp relief and are in remarkably pristine condition. Images depict men and women, giving viewers a glimpse into the clothing and hairstyle of the past. The art also features animals, hunting scenes and weaponry, such as bows, arrows, sticks, and spears. (Photos by Chiara Ciampricotti Iacoangeli)





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JHAH COVID-19 Vaccination Program

The COVID-19 vaccine is available to all Saudi Aramco employees, retirees, and their eligible dependents aged 18 years and over.



Scan the QR code to visit our COVID-19 Vaccination page. You can register online, or use the quick link to access and register on your MyChart account.

Please continue to follow infection prevention measures to keep everyone safe and well.



مركز جونز هوبكنز
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It's a lot like chess (only at 300 km/h).

Join the **2021 F1 Aramco Employee League**. You could win VIP race access for a weekend. Although the first race has finished — there is still time to join the league and compete with your Aramco colleagues across the world. For registration instructions, scan the QR code below.

The top scorer from the 2021 F1 Aramco Employee League season will win three-day VIP Paddock Club access to a Formula 1 race next season!

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Story behind Iconic Pictures

Signing of the Concession Agreement, May 29, 1933

By Stuart Burt

With the sun pouring through the window in Khuzam Palace, Finance Minister 'Abd Allah Al-Sulayman and Standard Oil Company of California (Socal) attorney Lloyd N. Hamilton finalize the negotiations that had dragged on for more than three months.

The lead negotiators for the Kingdom of Saudi Arabia and Socal signed the concession agreement in Jiddah on May 29, 1933. New research reveals the surprising truth about how the agreement, which led to the creation of the greatest oil company the world has seen, actually came about.

Hired helper takes control

Although, the signing nearly didn't happen. The negotiations were on the point of breaking down on three separate occasions, the most critical of which was at the end of March. But it wasn't either Al-Sulayman or Hamilton who saved the day, it was a man who, somewhat surprisingly, worked for both sides and who is largely forgotten today. Harry St John Bridger Philby was actually famous at the time as an Arabian explorer, and was undoubtedly a brilliant Arabist (a term describing a westerner expert in both the Arabic language and Arab culture). Crucially, he had been a long-time friend of King Abdulaziz.

Though Socal had asked Philby to gain an introduction with the King in December 1932, they didn't sign him as a consultant (on very lucrative terms, as far as Philby was concerned) until Hamilton arrived in Jiddah in the middle of February 1933. Maybe they did so to stop him signing with the only other competitor for the concession, the British controlled Iraq Petroleum Company (IPC). But, whatever the reason, it proved an inspirational decision.



Harry St John Bridger Philby in 1932, the year before he played a vital role in the negotiations for an oil concession agreement between King Abdulaziz and Standard Oil of California (SOCAL).



With the sun pouring through the window in Khuzam Palace, Finance Minister 'Abd Allah Al-Sulayman and Standard Oil Company of California attorney Lloyd N. Hamilton finalize the negotiations that had dragged on for more than three months.

Benefitting both sides

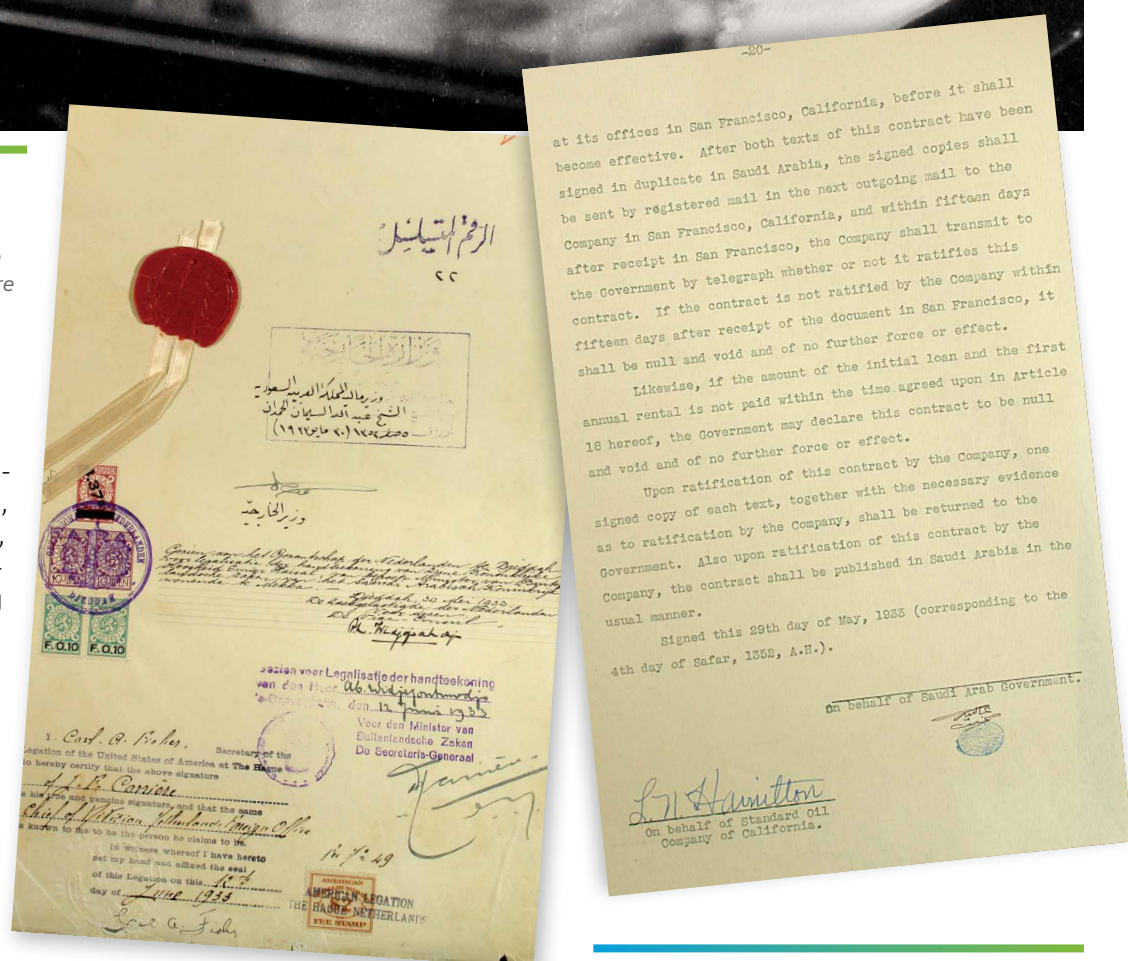
But the curious detail in this arrangement is that Socal didn't realize, until later, that Philby was in close, private consultations with Al-Sulayman (and occasionally the King himself) the whole time. Philby had resigned from Britain's Indian Civil Service because he disagreed with what he perceived as the overt imperialism of the major power in the Middle East.

As Philby later recorded, he gave a verbal assurance to both Al-Sulayman and the King that he would "give priority to the interests of the government."

But this close, personal relationship between the Saudi government and Philby, which might at first sight appear to be disadvantageous to Socal, actually worked to the advantage of both parties.

The crisis came with the government's response to Socal's opening offer. Al-Sulayman tabled his counter-offer on March 31 and insisted on his main demand of 100,000 gold pounds, which Socal thought excessive, when no one knew anything for certain about the geology of the al-Hasa region — as the Eastern Province was then called.

Hamilton, who had somewhat unwisely had gone to Cairo to consult with his managing director, responded in a cable: "We regret necessity of withdrawing our offer ... there is no use of my return."



The concession agreement was signed initially by Finance Minister 'Abd Allah Al-Sulayman and Socal attorney Lloyd N. Hamilton on May 29, 1933. During the following months, the document acquired several other signatures, including that of Foreign Minister and future King, Faysal, acting on behalf of his father. Faysal's signature was initially authenticated by the Dutch vice consul in Jiddah and later by the American minister to the Netherlands in The Hague.

Philby calms the storm

Philby was the one to calm the troubled waters. He had lunch with the King on April 1 and explained that Al-Sulayman had caused real concern with his inflexibility. The King responded: "Don't be concerned about that!" Reassured, Philby then spoke to Yusuf Yasin, the King's chief secretary, and ascertained that the King was convinced of Socal's serious intent to develop — and not merely hoard — any oil they found, which was one of the main concerns about the IPC proposal.

Yasin gave a strong hint that the government would be willing to accept 50,000 gold pounds. Philby immediately notified Hamilton's assistant, and when Hamilton received this news in Cairo on April 4, not only were his fears allayed, he left for Jiddah the same day.

There were still difficulties to over-

come, not the least being when America came off the gold standard on April 20. Subsequently, the government and Socal knew where each other stood after the crisis, and IPC never again had a serious chance once Hamilton and Al-Sulayman resumed negotiations on April 11.

The stage was set for Socal and Saudi Arabia to form one of the most remarkable commercial ventures of the 20th century.

Clean fuels project put Kingdom's environment first

By Eamonn Houston

The Ras Tanura Refinery (RTR) has recorded a major milestone in environmental stewardship with the completion of an Ultra-Low Sulfur Diesel (ULSD) system, which will see cleaner, environmentally friendly fuel distributed across the Kingdom.

The Aramco Project Management Team (PMT) handed over the new system to Ras Tanura Terminal (RTT) operations as part of the landmark Clean Fuel Project's scope of work.

The development is expected to allow the commissioning and introduction of a new type of diesel with less environmental impact in the Kingdom's network by the end of this year, meeting government regulations, and helping to reduce emissions in urban centers.

Executed at multiple locations across the RTR and RTT, the project was inaugurated by Aramco president and CEO, Amin Nasser, in January and is now producing ULSD.

The work has included the construction and pre-commissioning process and the installation of ULSD pumps, and the modification of existing tanks and their interconnecting jump-over lines.

A network of 30-inch transfer lines from the RTT and the Dhahran Bulk Plant have been completed and are currently under commissioning.

Significant environmental contribution

Refining and NGL Projects Department



manager, Megbel A. Al Shammari, explained that the project would make a contribution to Aramco's commitment to environmental stewardship.

"With the mechanical completion of the ULSD system within the RT Clean Fuels Project, we fulfilled our commitment to hand over the required systems to operate and supply transportation fuels to domestic as well as international markets in the most reliable and cost-effective manner, taking into account environmental regulations and specifications," Al Shammari said.

Collaboration

He added that the milestone had

been made possible through effective collaboration with multiple stakeholders within Aramco's organizations.

Project manager Basim L. Al-Shahrani spoke of the pride of the team involved.

"Team work and alignment with all stakeholders resulted in us meeting our commitment to complete this important part of the Clean Fuels Project objectives," he said.

The project team is also proud of achieving 50 million safe man-hours with zero lost time injuries. The achievement was a result of

stakeholder's engagement, collaboration, and a commitment to safety, setting a world-class standard for executing mega-projects in brown fields.

The Clean Fuels Project is a part of Aramco's corporate objective to intensify the focus on safety and the protection of the environment.

Multiple projects

A program consisting of multiple projects in Saudi Arabia was executed to comply with the future transportation fuels specifications in the Kingdom.

This objective will be met upon completing the RTR Clean Fuels Project, which will support the company's corporate objective to conduct activities in an environmentally responsible manner by upgrading the existing diesel and gasoline products at both the RTR and RTT.

Reducing emissions

This budget item will help reduce ground level emissions in the Kingdom's major urban centers as well as increase overall RTR gasoline production by 60,000 barrels per day.

During the project planning stage, the project team implemented continuous value improvement exercises, an in-depth safety assessment, a project risk assessment and its timely mitigation to optimize the ULSD system design, and an upgrade of the existing infrastructure and systems in accordance with the objectives.

Company students view and participate in green dream

By Dalia Darweesh

A group of enthusiastic future employees enjoyed a new environmental awareness program, including a guided tour of the nursery and a tree planting activity.

The female College Preparatory Center (CPC) students and male Industrial Training Center (ITC) trainees attended the program, which is a collaboration between Training and Development (T&D) and the Central Community Services Department (CCSD).

The goal of the program is to educate future generations about CCSD's efforts toward creating a green environment by introducing people to the nurseries and mangroves, and raises awareness of the Kingdomwide initiative to plant 1 million trees.

Suhad K. Alfaddagh, from CCSD's Recycling Group, said, "The main objective of the admin area is to promote well-being, including having a green community. This is a great opportunity for CPC and ITC students to learn more about farming, as well as recycling concepts."

Nursery tour

The tour began at the Dhahran Nursery, which is currently displaying indoor plants such as seasonal flowers and



herbs. The nursery promotes innovative ideas and new farming techniques, including no soil hydroponic and vertical farming.

The nursery has a green community wall, a fountain, a Knowledge Plaza, planter boxes, and various greenhouses. It also has a Patis France Café for community members to take a break and enjoy the refreshing scenery of plants and flowers throughout the area.

Halah T. Al Betairi, acting administrator of Gardening and Sanitation Ser-

vices, said, "This is a great program for both CPC females and ITC male students in collaboration with T&D, as it raises awareness on the environment. We want this to be a recurring segment in their programs."

1 million trees

The collaboration coincides with the Kingdom's 1 million trees initiative that is scheduled to be completed by the end of March.

Al Betairi continued, "CCSD strives to

have an overarching theme aligned, as we want to adapt similar tours in our other communities, including Ras Tanura, al Hasa, and Abqaiq's Heaven and Nature Reserve."

The students arrived to the plantation area next — one of the many locations of the 1 million trees initiative. Each student contributed by planting a tree.

Excited students

Nujood Al Shraidah, a CPC student, said, "I'm happy to be making an environmental impact such as this one today. We, as the youth, should always engage in similar activities in the community. I feel accomplished."

Sada, another female CPC student, said that it felt great to be able to give back to the community, and was proud to contribute to a company that she will work for in the future.

Hazzam Al Otaibi, an ITC student, expressed how he felt after he planted a tree. "I'm glad I am able to be a part of such an initiative for the Kingdom, especially to prevent desertification."

Mohammed Al Yami, a fellow ITC student, explained how he used to plant when he was young, and how he was enthusiastic to see his full-grown tree one day.

Digital radiography technology adds oxygen to welding inspections ahead of 2023 rollout

The Inspection Department has successfully field-tested digital radiography technology to test project welding safety.

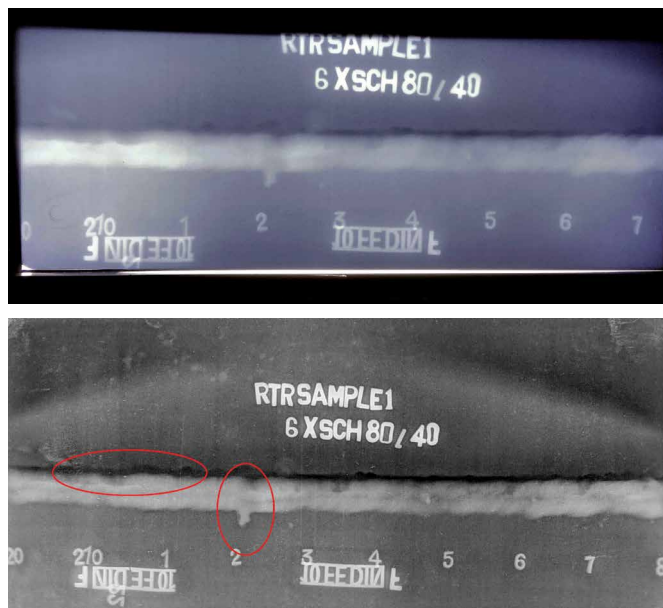
The first digital tests of welding quality and integrity were performed at the Haradh and Hawiyah gas production plants on the giant Ghawar field, and pave the way for a planned companywide rollout to replace conventional testing by 2023.

Digitizing industrial radiography testing vastly improves image quality and process speed, and does away with hazardous chemicals, dedicated dark rooms, lengthy transportation, and specialized storage facilities.

Under the new two-minute process, digital detectors automatically produce a high quality electronic image. This can be scanned and displayed on any digital monitor, sent over the internet, and stored on the cloud or memory sticks. It can also be printed, if necessary, using reusable film.

Previously, manual radiography testing was a lengthy 30-minute process that involved using special equipment with chemicals and darkroom technology to extract a lower quality paper image, akin to analog photography. After extraction, the picture was interpreted to assess the weld quality.

This manual process was time-consuming, often resulting in backlogs and project delays, partly as a result of trans-



Comparing the digital radiography image (bottom) quality to the conventional radiography image (top), the weld defects can easily be captured as seen in the encircled areas. This is due to the enhanced radiographic image sharpness also known in the industry as "spatial resolution."

portation and storage of sensitive films in climate-controlled facilities.

The main objective of project inspection is to ensure quality. Projects have significant welding operations on-site or at fabrication shops. Using X-rays or gamma rays to see through the welds automatically ensures the joints meet standard acceptance criteria for safe and reliable operation.

The digital radiography technology will be deployed on all company projects and operating facilities by 2023, and will shorten the cycle of weld examination, significantly improving project progress.

The successful deployment was the

result of collaboration between the Inspection Department, the Gas Compression Project Department, Spanish-based contractor Técnicas Reunidas, local construction contractor Nasser S. Al Hajri Corporation, and a local nondestructive technologies (NDT) service provider, the NDT Corrosion Control Services Company.

Isa H. Al-Mudaibegh, an NDT engineer with the Inspection Department, was impressed with the results of the digital radiographs.

"Welding inspection using digital radiography will be more reliable in terms of inspection quality, when compared to conventional testing, and far more efficient."

Toward a circular economy

A circular economy is one of the latest global business models that Aramco is adopting. Circular economy is essentially the conservation and reuse of materials. Instead of making, using, and then disposing of materials, circular economy tries to keep resources in use for as long as possible by extending their life and then recycling them into something else.

There are many opportunities within the company where circular economy can be applied effectively. Inspection engineering is one of those areas.

Once digital radiography technology is rolled out to all Aramco projects and operating facilities by 2023, it will result in the elimination of the production of millions of hardcopies of conventional films and climate-controlled storage facilities, replacing them with digital images stored on a cloud server. The technology will also have a positive environmental impact by eliminating the use of thousands of gallons of processing chemicals.

Bader A. Busbait, manager of the Inspection Department, said digital radiography was only the first step for the department's digital transformation.

"There are numerous other inspection programs, services, and techniques that have great potential for digitization and optimization that will be implemented in the near future," he said.

"This will ultimately support Aramco's circular economy."



Photographic memory

A long pipeline into the desert
Work crews battle the desert elements while laying pipeline between Qatif Junction and Abqaiq in this photo from July 1966.



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Publishing director: Meteb F. Al-Qahtani
Supervisor Content Creation: Jamsheed Din
Editors: William Bradshaw and Todd Williams
Editorial staff: Musherf Alamri, Eamonn Houston, Scott Baldauf, Dalia Darweesh and Rawan Nasser.
Designer: Husam Nasr.

Articles and coverage can be requested through CRM.
Correspondence may be addressed to the editor, North Admin Building, Room AN-1080, C-05A.



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the arabian sun

Jubah:
an open-air
museum
where
millennia are
carved in rock

see pages 6 and 7



Springtime in the Eastern Province

By Musherf Alamri

A three-hour drive northwest of Dhahran, the desert is blooming with life.

The landscape from Nariya to Hafar al-Batin, a further two-and-a-half hours away has sprouted seasonal green grass and wildflowers.

Nariya, a governorate of 52,000 residents has plenty of green landscape to enjoy. Some tourists then proceed 70 km northward to Qaryat al-'Ulya, "the upper village" in Arabic, which has witnessed important events in the formation of the Saudi state.

Other tourists then drive to the Hafar al-Batin Governorate, which is 500 km northwest of Dhahran and has around 382,000 residents. Hafar al-Batin city has the only dam in the Eastern Region.

The dam was built to stop the city flooding from the al-Batin Wadi, part of

the mighty Ramah Wadi, which starts in the Medina Region, and crosses the Qasim and Eastern regions for 1,000 km.

Desert truffles

Locals and tourists alike go looking for desert truffles, called "faqae," in the Hafar al-Batin area. The delicacies are also available for purchase from the vegetable market in the city. The area is also known for its livestock, and it is common for butchers from Dammam to source meat from here.

Hafar al-Batin's location presents many options to tourists with bigger travel plans. From here you can go to Kuwait via the Ar-Ruq'i crossing, which is 110 km northeast of the city; Riyadh, which is 500 km to the south; or continue northwest to 'Ar'ar, Sakaka, or Jordan.

This desert thriving with plants and flowers attracts many domestic, and in normal times international tourists, and it is common for hotels to have high occupancy rates this time of the year.

Those wishing to avoid the caravan



This thriving desert with plants and flowers in Nariya and Hafar al-Batin attracts many tourists from the Kingdom as well as the Gulf Cooperation Countries, particularly Kuwait. So, it is common for hotels to have high occupancy rates during this time of the year.



Nariya is around 200 km northwest from Dhahran, and is the closest town to Aramco facilities in the northern area, such as Manifa and As Saffaniyah. Nariya has plenty of green landscape to enjoy, and many may choose to end their trip here and enjoy the surroundings. (Photos: Musherf Alamri)

of trucks streaming from the Dammam port to Jubail Industrial City can take the Dhahran-Jubail expressway, then turn via Road 6 in Jubail to Expressway 95, and eventually take a left to Road 85.

Travelers are advised to ensure they have sufficient supplies, a suitable vehicle, and have informed someone about their planned route and return time.



In the Hafar al-Batin area, many locals and tourists go looking for the desert truffles, which are called locally "faqae." During the season, people can purchase truffles from the vegetable market in the city, although they are not cheap.

Hafar al-Batin Governorate, which has around 382,000 residents, and is 500 km northwest of Dhahran. Hafar al-Batin City is located in Al-Batin Wadi, which part of a Ramah Wadi, which starts from the Khaybar area in the Medina region, crosses the Qasim region and Eastern region.



Majestic wadi

Eric M. Cordoves was on vacation with his family in December and spent a day in Al Dissah on the way to Tabuk. Wadi Al Dissah, a majestic valley hidden 220 km south of the Tabuk region, is surrounded by beautiful, striking red pillar shaped mountains with fresh, clear water springs in hidden spots. Cordoves said the sweet scent of fresh air from palm trees brings a unique tranquility that was accentuated at both sunrise and sunset. He lives in Ras Tanura and works in Tanajib as a maintenance engineer in the Northern Area Gas Producing Department. Cordoves has been with the company 12 years.