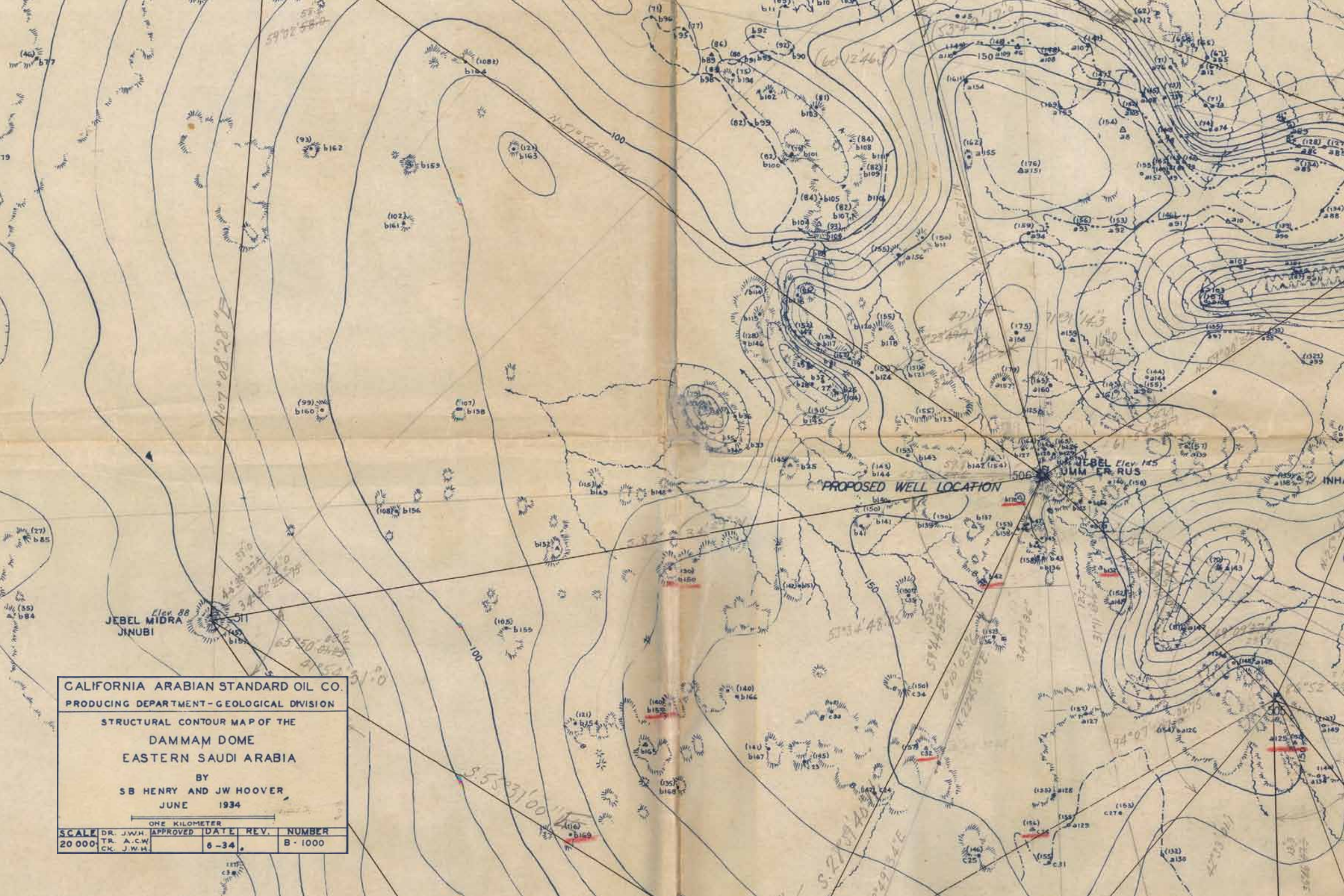


# ENERGY TO THE WORLD: THE STORY OF SAUDI ARAMCO VOLUME 1

ENERGY TO THE WORLD:  
THE STORY OF SAUDI ARAMCO  
VOLUME 1





CALIFORNIA ARABIAN STANDARD OIL CO.  
 PRODUCING DEPARTMENT - GEOLOGICAL DIVISION  
 STRUCTURAL CONTOUR MAP OF THE  
 DAMMAM DOME  
 EASTERN SAUDI ARABIA  
 BY  
 SB HENRY AND JW HOOVER  
 JUNE 1934

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VOLUME ONE

Energy to the World  
The Story of Saudi Aramco

VOLUME ONE

# Energy to the World

The Story of Saudi Aramco

Shown in this 1937 photo are Damman Well No. 1, right, the first oil well drilled in Saudi Arabia, and Damman Well No. 7, the discovery well.

# Contents

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| Volume One |                                   | Volume Two |                                   |
|------------|-----------------------------------|------------|-----------------------------------|
|            | Preface                           |            | <i>Illustration: Saudi Arabia</i> |
|            |                                   |            | viii                              |
|            | <i>Illustration: Saudi Arabia</i> |            |                                   |
|            |                                   |            | xiv                               |
| <b>1</b>   | <b>Prospects</b>                  | <b>1</b>   | <b>National Resources</b>         |
|            |                                   |            | 1                                 |
| <b>2</b>   | <b>Negotiations</b>               | <b>2</b>   | <b>Boom Time</b>                  |
|            |                                   |            | 27                                |
| <b>3</b>   | <b>Reading the Rocks</b>          | <b>3</b>   | <b>Transformation</b>             |
|            |                                   |            | 67                                |
| <b>4</b>   | <b>The War Years</b>              | <b>4</b>   | <b>Rising to the Challenge</b>    |
|            |                                   |            | 99                                |
| <b>5</b>   | <b>Expansion</b>                  | <b>5</b>   | <b>Achieving the Vision</b>       |
|            |                                   |            | 131                               |
| <b>6</b>   | <b>Growing Pains</b>              |            | Appendix                          |
|            |                                   |            | 168                               |
| <b>7</b>   | <b>Balancing Act</b>              |            | A. Upstream                       |
|            |                                   |            | B. Downstream                     |
|            | List of Abbreviations             |            | C. Operations Data                |
|            | Notes on Sources                  |            | Company Leadership                |
|            | Image Credits                     |            | Acknowledgments                   |
|            | Index                             |            | List of Abbreviations             |
|            |                                   |            | Notes on Sources                  |
|            |                                   |            | Bibliography                      |
|            |                                   |            | Image Credits                     |
|            |                                   |            | Index                             |



The gasoline treatment plant in the Ras Tanura Refinery, shown in 1948, was symbolic of Aramco's rapid growth after World War II and of its emergence as a key player in the global energy industry.

*This book would not have been possible without the support of the following members of Saudi Aramco management:*

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## Preface

I knew putting Saudi Aramco's history in perspective was going to be a challenge a few minutes into my 2007 tour of the construction site where now sits the company's Khursaniyah oil and gas processing complex. That's when I saw the massive steel storage vessel. One of six tanks on-site designed to hold natural gas liquids (NGL), it was 67.7 meters long and 6.6 meters wide and tipped the scales—had any been large enough to accommodate the submarine-sized cylinder—at 1,050 metric tons. Even though the intense desert sun made the thick steel far too hot to touch, that wasn't hot enough for its intended purpose. To withstand the rigors of hydrocarbon processing, the metal required heat-treating to 670 degrees Celsius for seven days. As hard as it was to imagine that kind of intense heat for so long, it was just as difficult to realize that, in order to speed delivery schedules, the vessels had actually been baked on-site in gigantic gas-fired ovens as if they were so many loaves of bread.

Impossibly big, impossibly heavy, impossibly hot and impossibly complex—but as I discovered during my many visits to Saudi Arabia and in my many conversations with employees, active or retired, Saudi or expatriate, “impossible” has never been in Saudi Aramco's dictionary. And as impossible as it might seem, the Khursaniyah project was only one of a half-dozen other massive Saudi Aramco oil and gas projects under way simultaneously around the Kingdom at that time. I was standing near the center of the biggest and most expensive peacetime construction program in history, led by the world's largest petroleum company, designed to increase production capacity levels from the largest proven oil reserves and the fourth-largest gas reserves on the planet. As I was to learn in the course of writing this history, this was just one example of the company's proud legacy of accomplishments in the petroleum industry.

Ultimately, any story of technological achievement gains lasting meaning only when told in the context of the individuals who conceived of and executed these marvels of modern development. The same can be said for nation building. Take away the people and we are left with mere statistics. The story of the evolution of Saudi Aramco and the unparalleled oil and gas resources it has developed, often under extremely trying conditions, is indivisible from the story of the development of Saudi Arabia itself, which was fueled by those very resources. And at the heart of these intertwined tales are the people who led the development of country and company.

Saudi sovereigns—the larger-than-life founder of Saudi Arabia known as King 'Abd al-'Aziz and his son and the reigning monarch, Custodian of the Two Holy Mosques King 'Abd Allah—begin and end our tale because the development of the country's natural oil and gas resources has followed the vision established by the country's rulers. Making this vision

a reality over the decades has been the responsibility of a cast of thousands of individuals from Saudi Arabia and scores of other countries. One thing unites them all, whether they are operators at the Haradh Gas Plant, maintenance workers at the Yanbu' crude oil terminal, teachers in the company school at Abqaiq or drillers in the Khurais oil field: They all share a unique identity as "Aramcons." This is *their* story.

Shaping a narrative history inevitably means focusing on the achievements of some at the expense of others. I have tried to tell the story of Saudi Aramco as accurately and fairly as possible. In the process, I have given voice to some who were not heard from in earlier histories of the region and era. If at the same time I inadvertently have silenced others, the fault is mine alone.

Scott McMurray

**NOTE ON SOURCES** With the interest of the general reader in mind, source notes are included for each chapter at the end of the volume in which the chapter appears. Sources are provided for major points raised in each chapter, and a list of books used as primary references for each chapter is also included. A complete bibliography is in the back of Volume Two. A list of all current and former employees of Saudi Aramco who were interviewed by The History Factory in the preparation of this history also is included in the appendix at the end of Volume Two. Unless otherwise noted, direct quotes from current or former employees of Saudi Aramco are drawn from these interviews or interviews conducted by Saudi Aramco employees.

**USE OF HISTORICAL SPELLING FROM SOURCE MATERIAL** To retain the sense of authenticity conveyed by original texts, this history uses the original spellings included in source materials that are quoted directly. Indirect quotes or other references use generally accepted contemporary spellings.

**ARABIC TRANSLITERATION** The transliteration of Arabic into English in this text follows a system used by Saudi Aramco, which closely adheres to a generally accepted system of transliteration from Arabic to English.

A few comments about the Arabic language for readers of English: One Arabic consonant that has no counterpart in English is the letter 'ayn, which is generally represented by an inverted apostrophe ('). It often appears in personal or place names, such as Al Sa'ud. When an Arabic word has acquired a common English-language usage, however, the popular form is used: Saudi Arabia instead of Sa'udi Arabia.

Other common Arabic usages bear explaining. The word *al-* (joined to the following word with a small "a," unless it begins a sentence or is part of an individual's name) is the definite article and corresponds to the English *the*. The similar *Al* (always with a capital "A" and never joined to the following word) means "House (or family) of." Al Sa'ud is the name of the ruling family of Saudi Arabia.

When naming offspring, 'abd, or "servant of," is commonly used to form Arabic personal names such as 'Abd Allah ("Servant of God") or 'Abd al-Rahman ("Servant of the Merciful"). The word *ibn*, sometimes pronounced *bin*, means "son of" or "descendant of the House (or family) of," as in Ibn Sa'ud. The word *abu* means "father of."



# Saudi Arabia



CHAPTER ONE

# Prospects



Exploring the Jafura sands, on the northern edge of the Rub' al-Khali, 1939.



King 'Abd al-'Aziz's personal warmth and humor are captured in this casual photo from 1931.

## As King 'Abd al-'Aziz ibn 'Abd al-Rahman Al Sa'ud strode into a spacious tent in early December 1922 near the Arabian Gulf port of al-'Uqayr, much was at stake.

At the time, he bore the title Sultan of Najd and Its Dependencies. Najd referred to the central plateau of the Arabian Peninsula whose capital was Riyadh. Its Dependencies, which King 'Abd al-'Aziz had controlled for a decade, referred to the al-Hasa region of low-lying salt flats, dunes and palm oases located along the Arabian Gulf coast. The official business seemed relatively straightforward: Here—at what became known as the 'Uqayr Conference—King 'Abd al-'Aziz and regional representatives of the British government were to address the formal boundaries between those areas presently under his control and those of his neighbors.

But King 'Abd al-'Aziz understood that his people and their aspirations for a better life were not clear to the British, the undisputed power in the region. The British contingent almost certainly underestimated the man in front of them. Lebanese author Ameen Rihani was constantly at the side of King 'Abd al-'Aziz throughout the 'Uqayr Conference, served as his interpreter and later chronicled the warrior-leader's exploits in colorful detail. Rihani once remarked, "... I believe that this man has many of the elements of greatness;—he is strong, fearless, unequivocating. ... He knows what he wants, and—what is best—he knows how much he can get of it at a given time."

A handful of British civilian and military officials over the years also had recognized the Arab leader's abilities, even if London was slow to take full measure of the man. Gertrude Bell, who served the British government in a number of civilian capacities in the Gulf region in the early decades of the 20<sup>th</sup> century and played an important role in determining certain boundaries of the region, offered a prescient portrait of the future King following a 1916 meeting: "As a leader of irregular forces he is of proved daring, and he combines with his qualities as a soldier that grasp of statecraft which is yet more highly prized by the tribesmen. To be 'a statesman' is, perhaps, their final word of commendation ... but the ultimate source of power, here, as in the whole course of Arab history, is the personality of the commander."

At the 'Uqayr Conference, King 'Abd al-'Aziz raised two issues that were key to accomplishing his goals: To consolidate the territories under his control and provide for his subjects.

Despite his desire for resources that could move his people toward a more prosperous life, in his meeting with Sir Percy Cox, the British high commissioner in Iraq, King 'Abd al-'Aziz was

---

Note: Through the more than five decades he spent unifying, building and leading his country—the Kingdom of Saudi Arabia—'Abd al-'Aziz ibn 'Abd al-Rahman Al Sa'ud, more commonly known in the West as Ibn Sa'ud, assumed more than one title: Amir, Imam, Sultan and finally King. For easy reference, the text of this book will consistently refer to him as King 'Abd al-'Aziz.

wary of signing any agreements that might further entangle him with the British. Like other Arab rulers, he had been negotiating with the British for years concerning boundaries and political and military affiliations. But unlike many others, King ‘Abd al-‘Aziz had maintained a greater degree of autonomy. This was clearly reflected in the fact that he personally met with Cox at the ‘Uqayr Conference. Other Arab rulers were often represented by British political agents in their dealings with the Crown.

While keeping Cox at a respectful distance, King ‘Abd al-‘Aziz showed a keen interest in a New Zealand mining engineer and former officer in the British Army who was also at al-‘Uqayr. Major Frank Holmes claimed no official capacity at the conference but saw to it that his tent was pitched between those of King ‘Abd al-‘Aziz and Cox. Holmes explained to fellow passengers en route to al-‘Uqayr that he was merely traveling in the area for health reasons. The fact that, as Rihani describes it, “he loomed up on the horizon unexpectedly as usual, and incorporated himself in the [‘Uqayr] Conference,” suggested he fostered a more serious purpose than simply taking in the desert air. To be certain, Holmes had no concerns about his health. And King ‘Abd al-‘Aziz knew just what the man was after: a commodity that would thicken his bankroll considerably while also providing King ‘Abd al-‘Aziz a significant source of income with which to build his Kingdom. Holmes had in fact visited him a few months earlier in Riyadh, seeking an oil concession in al-Hasa. Oil had been discovered in Persia (today’s Iran) in 1908, and there was much speculation about its existence in other parts of the Gulf region.

King ‘Abd al-‘Aziz, seated on the left, and British High Commissioner in Iraq, Sir Percy Cox, seated on the right, meet to discuss regional border issues at al-‘Uqayr in late 1922. They are joined by retired British Army Major Frank Holmes, standing between the two. Holmes interjected himself into the high-level conference as well as the photo, offering the Arabian leader £3,000 in gold a year on behalf of British investment group Eastern and General Syndicate for the right to prospect for oil in the eastern portion of his domain of Arabia.



“To be specific, there is oil, it is thought, in the Province of Al-Hasa,” recounted Rihani, “and the oil-man ... is willing, on a sporting chance, to dig anywhere. But before digging there must be a concession—and thereby hangs a tale.”

Thereby, indeed, hangs a tale. The story of Major Frank Holmes and the origins of what eventually became the Saudi Arabian Oil Company, or Saudi Aramco, must be temporarily suspended while our focus turns to the House of Sa‘ud. The reason is simple but of great importance: The vision of King ‘Abd al-‘Aziz was about building a unified and sovereign nation with a prosperous culture. Behind the concessions and contracts and the gyrations of oil prices lies the story of the growth and development of a people. It is appropriate, therefore, to take a look at the events that drove King ‘Abd al-‘Aziz’s vision.



**THE DEVELOPMENT OF A LEADER** By early manhood, the future founder and King of Saudi Arabia had learned a great deal that would prove useful throughout his rule. First, he was recognized as an astute warrior and a natural leader from an early age. In the years immediately following the Al Sa‘ud’s 1891 loss of their capital, Riyadh (see “The Al Sa‘ud Dynasty,” p. 7), he honed his desert survival skills while still a teenager living with Bedouin tribesmen on the edge of the Rub’ al-Khali. (The fact that, at 190 centimeters, or six feet two inches, King ‘Abd al-‘Aziz towered over most of his fellow Arabs must have also given him considerable advantage as a fighter.) Second, his talent at negotiation and ability to take keen measure of both Arabs and Westerners benefited from the years he and his father lived in bustling Kuwait, a port and trading center on the Arabian Gulf. The *Shaykh* of Kuwait, who hosted the future King’s father, Imam ‘Abd al-Rahman, and his family in 1896, was considered an effective diplomat. The young ‘Abd al-‘Aziz observed him negotiating with representatives of foreign powers, including Great Britain, Russia, France, Germany and the Ottoman Empire.

King ‘Abd al-‘Aziz was determined to regain Riyadh and reunite the land of his forefathers. After a failed attempt in 1901, the future King remained undaunted, once again demonstrating the courage and resolve that defined him as a leader. As the sun rose over Riyadh on January 15, 1902, he surprised a numerically superior force with his band of some 60 fighters, retaking the city. His father returned to the city in May. Instead of reassuming leadership, as would have been customary, the father stepped aside as ruler of Riyadh in his son’s favor.

As the boundaries of his realm swelled, King ‘Abd al-‘Aziz gained both recognition and respect. He spent the next 12 years, leading up to the start of World War I, forging alliances with Arab chieftains. He fought some opponents and developed close bonds with other tribes to expand his sphere of influence in central Arabia.

A camel caravan in 1924 passes the walls of Hofuf, an ancient trading center located in al-Hasa, one of the largest oases in the world. At the time, al-Hasa also referred to most of the eastern part of Saudi Arabia, which included the oasis of Qatif and the port towns of Jubail and al-‘Uqayr.

With the advent of World War I, the British reached out to strengthen their relationship with King 'Abd al-'Aziz following his 1913 reconquest of al-Hasa Province. In fact, Captain William Shakespear, a British officer in Kuwait who came to Arabia to meet with King 'Abd al-'Aziz to win his alliance to the British, was killed in January 1915 while with forces loyal to the Al Sa'ud in a battle against the Al Rashid. The mission was accomplished after his death, as King 'Abd al-'Aziz signed the Anglo-Saudi Treaty of 1915—commonly known as the Darin or Qatif Treaty—with Sir Percy Cox in December of that year. This British treaty recognized Al Sa'ud rule over Najd, al-Hasa, Qatif and Jubail.

The Sharif Husain ibn 'Ali, then ruler of the Hijaz in western Arabia, who controlled the Holiest Cities of Islam, Makkah and Madinah, reconsidered an earlier allegiance to the Turks and also sided with the British. With their backing, the Sharif Husain declared the Arab Revolt against the Turks in 1916. His troops, under the leadership of his son Faysal, harassed Ottoman troops for the next two years, leading to the 1918 fall of the Ottoman stronghold Damascus after an assault that included British, Australian and French forces. The Arab Revolt became famous in the West due to the exploits, and later writings, of the British political officer assigned to Faysal, T. E. Lawrence, who gained renown as Lawrence of Arabia. As a result of the Arab Revolt, Faysal was installed on the throne of Iraq, and his brother 'Abd Allah was made leader of what was then known as Transjordan, modern-day Jordan.

**Merchants load goods on camels in the Qatif *sug*, or open-air market, in 1939. Located north of Dammam on the Gulf coast, the Qatif date palm oasis and town is smaller than the al-Hasa oasis and its associated trading center of Hofuf to the south, but is a bustling commercial hub in its own right.**



## The Al Sa'ud Dynasty

The Al Sa'ud dynasty traces its roots to Sa'ud ibn Muhammad, who became ruler of al-Dir'iyyah just north of Riyadh in about 1720. He was succeeded by his son Muhammad ibn Sa'ud, who in 1744 decided to join forces with a religious scholar named *Shaykh* Muhammad ibn 'Abd Al-Wahhab. Together they unified the tribes and regions beginning from their base in the town of al-Dir'iyyah to include much of present-day Saudi Arabia by the early 1800s. Muhammad ibn Sa'ud offered the tribes forceful and just leadership, while the *Shaykh* preached a return to Islam's pure principles. The House of Sa'ud's rule survived the death of Muhammad ibn Sa'ud in 1765 and expanded geographically during the reign of his son 'Abd al-'Aziz and his grandson Sa'ud. It was toppled in 1818 during the reign of his great-grandson 'Abd Allah by forces under the direction of the Ottoman governor of Egypt.

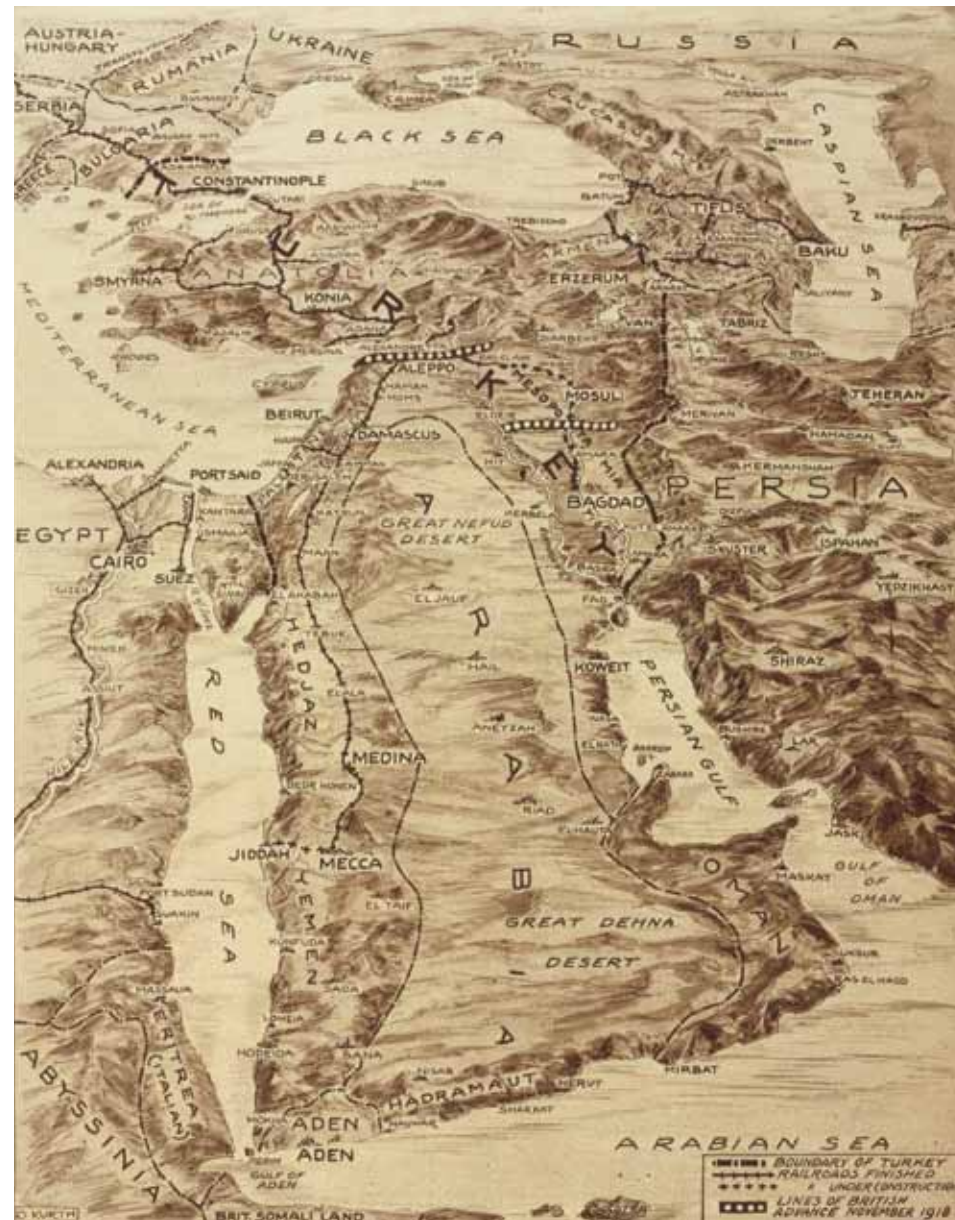


The fortunes of the House of Sa'ud revived in 1824 under the leadership of Turki ibn 'Abd Allah, another great-grandson of Muhammad ibn Sa'ud. Turki was an astute leader. Among the accomplishments of his decade-long reign was the reestablishment of control over the al-Hasa region. After Turki's assassination in 1834, the mantle of leadership passed to his son Faysal, who was twice captured by the Egyptians as they asserted Ottoman control in Arabia. He escaped his second imprisonment in 1843 to rule from Riyadh until his death in 1865.

Infighting among Faysal's sons weakened the House of Sa'ud, leading to the loss of al-Hasa to Ottoman forces in 1871. The Al Sa'ud lost control of their capital of Riyadh in 1891, following a battlefield defeat by forces led by the rival House of Rashid from north-central Arabia. The Al Sa'ud leader, Imam 'Abd al-Rahman, and his son 'Abd al-'Aziz sought refuge with the Al Murrah tribe on the fringe of the Rub' al-Khali, the great southern desert of Arabia known as the Empty Quarter. They went to nearby Qatar and Bahrain before settling as guests of the *Shaykh* of Kuwait in 1896. Six years passed before the restless King 'Abd al-'Aziz and a small band of men retook Riyadh and started on the path that led to the creation of the Kingdom of Saudi Arabia in 1932.

**A youthful and determined-looking King 'Abd al-'Aziz, seated left, meets with his ally *Shaykh* Mubarak Al Sabah of Kuwait, seated center. The photo, taken in Kuwait in 1910 by British Army Captain William Shakespear, eight years after the Saudi leader recaptured Riyadh, is among the earliest known photographs of the Saudi monarch.**

This 1919 map of the “Near East” from *The New York Times* depicts British advances in the final months of World War I. Arab forces participated with British forces in the capture of Damascus. The victors soon redrew the map of the region, turning the remnants of the Ottoman Empire into present-day Iraq, Syria, Jordan and Lebanon.



By mid-1924, King ‘Abd al-‘Aziz, after consultations with tribal and other leaders, was ready to move against the Sharif Husain to further unite his country. As the contingent from Najd descended on Tayif, troops under the leadership of the Sharif’s oldest son, ‘Ali, abandoned Tayif. Nearby Makkah quickly fell to King ‘Abd al-‘Aziz’s forces. With Makkah in Al Sa’ud hands, prominent families of the Hijaz, mostly of the merchant class, advocated the Sharif’s abdication in favor of his son, ‘Ali. In October 1924, after months of indecision, the Sharif Husain finally stepped down and left Arabia via Jiddah, where his son had moved his base of operations. After a yearlong and largely bloodless standoff, ‘Ali surrendered to King ‘Abd al-‘Aziz and resettled in Iraq, where his brother was king. In early 1926, the leading Hijazi families pledged their allegiance to King ‘Abd al-‘Aziz as King of the Hijaz and Sultan of Najd and Its Dependencies. Britain quickly recognized the new leader, as did the USSR, France and the Netherlands.

**THE INHABITANTS OF AL-HASA** For centuries, the name *al-Hasa*—which refers specifically to the largest natural date palm oasis in the world—was used to refer to almost all the eastern part of what is now known as the Kingdom of Saudi Arabia. In addition to the oasis of al-Hasa itself, and the provincial capital of Hofuf located there, this region included the oasis of Qatif and the port towns of Jubail and al-‘Uqayr, as well as vast deserts extending north- and southward.

The people of the oases in the al-Hasa region made their modest livelihoods from date cultivation and farming. From Qatif in the north to the much larger Hofuf and areas farther south, date palm oases spawned trading villages. Al-‘Uqayr, where King ‘Abd al-‘Aziz met Sir Percy Cox and Frank Holmes in late 1922, served as the port for travelers to Hofuf, 64 kilometers inland. Al-‘Uqayr is believed by historians and archeologists to have been an important ancient trading port. In fact, some believed it to be the location of the ancient city of Gerrha.

Visitors to the oasis were struck by the lush palm trees and crops, and by a constant squeaking. Whether walking to or from the crowded *sug* during the day, or finding their way at night through, the dark, narrow streets lined with the walls of adjacent housing compounds, what they heard was the sound of donkey-powered wooden water wheels, which drew water from wells to supplement the natural artesian springs in the area. Surrounded by a massive town wall and attached fort, Hofuf served as provincial capital for hundreds of years under Ottoman rule, and archeological evidence suggests the area, with its reliable source of water, was engaged in trade stretching back thousands of years.

In the 1920s, along the Arabian Gulf coast north of al-‘Uqayr, a collection of houses stood near the shore. These *barastis* were built mostly from date palm fronds collected in the area and tied to poles lashed together to form a frame. This was the small pearling and fishing village of al-Khobar, formed less than a decade earlier mainly by members of the al-Dawasir tribe, who sailed over in small dhows from Bahrain back to the Arabian mainland to avoid a political dispute.

Teams of donkeys plod endlessly up and down earthen ramps in Riyadh in 1937 to draw goatskin bags of water to the surface. As Saudi society became increasingly mechanized in the 1950s, motorized pumps replaced the donkeys.





The broad Suq al-Khamis street, home to the well-known Thursday market, is bordered on the right by a dry moat and the walls of al-Kut, the fortified inner quarter of Hofuf. This photograph, taken September 10, 1933, less than two weeks before American geologists arrived in Saudi Arabia to begin the search for oil, captures the country poised on the brink of enormous change.

Other dhows from the same group landed a few kilometers farther north near an old fort and formed the nucleus for the village of Dammam. These were people who had adapted to the sea, after having arrived in Bahrain from Najd in the 1870s.

For many years, local fishermen had been casting nets for Gulf fish while divers harvested pearls from the waters along the coast. The pearling season began in early June and lasted through most of September. With ropes around their waists and nose clips to prevent them from breathing through their nostrils, the pearl divers would grab baskets and descend in search of oysters. The most agile divers stayed underwater up to two minutes, giving a yank on their rope as a signal to the puller on the boat to haul the diver to the surface. No wages were paid. Diver, puller and captain all received shares of the profits after deducting expenses for food and water. The pearls were bought by merchants or brokers who resold the pearls to merchants throughout the region, and even in Europe and India. The people of al-Hasa and Qatif, as well as many of the families who sailed from Bahrain to settle in al-Khobar and Dammam, formed the core of the population that would provide the workforce for the rapid development of the region in decades to come. One of them, the son of an al-Khobar pearl diver, was a future president and CEO of Saudi Aramco: Abdallah S. Jum'ah.

## Spanning Cultures

Ameen Rihani was a Lebanese-American author who wrote extensively in both Arabic and English, advocating Arab nationalism and interpreting the differences between Arab and Western cultures. His books on Arabian and Middle Eastern politics, history and culture gave the world an Arab perspective missing from most early 20<sup>th</sup>-century English-language works.

Although born in Lebanon in 1876, Rihani grew up in New York City, where he developed a passion for literature. In 1897, he departed for his homeland to recover from a lung infection. During his stay, he immersed himself in Arabian poetry and literature. When he returned to New York two years later, he continued to explore his native literary heritage by contributing to Arabic journals, translating Arabic poetry into English and writing books. He journeyed to Lebanon again in 1905, where he spent six years writing in Arabic before publishing the highly acclaimed *Book of Khalid*, the first Arab-authored novel in English, in 1911.

Rihani became increasingly political after returning to the United States in 1911. A staunch advocate of Arab nationalism, he represented the emigrant Lebanese at the first Arab Congress in Paris in 1913. He revisited the Middle East in the 1920s, where he spent six weeks with King 'Abd al-'Aziz, which culminated in Rihani serving as his interpreter at the 1922 'Uqayr Conference. Rihani's 1928 book, *Ibn Sa'oud of Arabia*, chronicled his stay with King 'Abd al-'Aziz and championed the cause of the Saudi leader.

Rihani died in September 1940. He is remembered as a pioneer who revitalized the literary bridge between East and West and shaped the modern Arab intellectual renaissance.

Other inhabitants of al-Hasa made their lives in the desert. Inland from the oases and the fishing and pearling villages hugging the shore stretched hundreds of kilometers of shifting sand dunes, salt flats and limestone outcrops. Trees and bushes survived in low spots where scarce rainfall collected. Grass and tiny wildflowers spread in the spring, following wet winters, only to be scorched by the harsh sun when summer began.



This was the domain of Bedouin tribes who, using the stars and desert landmarks in place of compass and map, journeyed with goats, sheep and camels, always in search of forage and fresh water, as their predecessors had done for thousands of years. *Bait al-Sha'r* (house of hair), the black Bedouin tent woven from goat hair, appeared by the dozens or even hundreds overnight in certain areas as recent rains produced fresh grass for their livestock. Bedouins occasionally visited towns to sell livestock, butter and woven goods and to buy staples such as dates, rice, wheat, barley, coffee and sugar. At times some tribes took up agriculture, though all professed pride in their nomadic existence and self-sufficiency. And townspeople, while often thinking of themselves as more sophisticated than the Bedouins, often had nomadic relatives not too far back in their genealogical histories.

For Bedouins, life could be brutally harsh. This was especially true during drought years, when livestock perished and some members of the tribes, weakened by continuous hunger, fell prey to disease. Tribes linked by blood relations and intermarriage supported each other with precious food and water in times of need and rallied to each other's defense when under attack from rival tribes.

**"HARDSHIPS ... JOY AND LAUGHTER"** Nassir Ajmi, who retired from Saudi Aramco as executive vice president at the end of 1992, was born in late December 1935 in a Bedouin encampment on the western edge of what became known as the Ghawar oil field. He reflected on his upbringing in his 1995 book, *Legacy of a Lifetime*:

Nomadic life was a continuous struggle, but the alternatives were few—limited to subsistence farming, fishing and pearl diving—and just as arduous. Animal rearing was the most lucrative, but nomads looked down on farming because it would force them to settle and restrict their freedom of movement. Fishing and pearl diving were similarly despised, for the nomads disliked and feared the sea, to the point of actually starving before eating fish or serving it to their guests. ... Despite constant hardships, the simple nomadic life was full of joy and laughter. The Bedouin considered themselves superior to farmers and townsmen because of their perceived genealogical and linguistic purity, their courage, resourcefulness, hospitality and generosity. Their distinctive way of life made them self-reliant, proud, extremely loyal to the tribal heritage and lovers of freedom. Their integrity, courage, friendship and hospitality were beyond reproach, and it was among the Bedouin that the poets, tellers of epic stories, sportsmen and hunters were to be found.

**A pearling crew awaits high tide to lift its dhow from a beach in Kuwait in 1924. Pearling in the Gulf, which reached its peak in the 1920s, was one of the region's greatest sources of wealth before the discovery of oil. The merchants and *shaykhs* of the Gulf region made millions of dollars each year from the pearl trade before Japanese cultured pearls, and the Great Depression, nearly wiped out the industry.**



Lebanese-American author Ameen Rihani, seen here at the elbow of King 'Abd al-'Aziz in this undated photo, served as the monarch's interpreter at the 1922 'Uqayr Conference. Rihani later incorporated his conference notes into his 1928 biography of the Saudi ruler, *Ibn Sa'oud of Arabia*.



For King ‘Abd al-‘Aziz, the Bedouin tribes presented a major challenge to creating a unified people. “Indeed,” noted Rihani, “the Bedu robbed Ibn Sa‘oud of many a night’s sleep.” King ‘Abd al-‘Aziz had to convince them that by settling down, they and their descendants could enjoy a better and more prosperous life. Thus, said Rihani, King ‘Abd al-‘Aziz built them settlements—called *hijar*—each close to a ready supply of water, and provided each family their own patch of land, where they “began a new life by tilling the soil.” Building towns and turning the Bedouins toward cultivation and trade were early steps in King ‘Abd al-‘Aziz’s efforts to improve his people’s quality of life.

**AGREEMENT IN AL-‘UQAYR** Sir Percy Cox and King ‘Abd al-‘Aziz resolved their boundary issues with the Treaty of ‘Uqayr on December 2, 1922. The ‘Uqayr Protocols essentially delineated the boundaries between the areas controlled by King ‘Abd al-‘Aziz and neighboring countries. The protocols also established a Neutral Zone between Kuwait and Najd, to be jointly controlled by King ‘Abd al-‘Aziz and the Kuwaiti government, and a Neutral Zone between Iraq and Najd.

King ‘Abd al-‘Aziz was very cautious when dealing with powerful foreign governments. The King was not willing to make any agreements that would cast him as a pawn in an international chess match. Reflecting his experience, pride and autonomy, King ‘Abd al-‘Aziz himself aptly described his sentiments about the British government in conversations with Rihani, who recounted the King’s words in his biography of the Saudi monarch: “They spin and spin—spin nets for me. ... When the Inglaiz [English] want something, they get it. When we want something we have to fight for it. ...”

This Bedouin family pauses good-naturedly near Abu Hadriya, about 60 kilometers north of Dhahran, to have a photo taken in 1935.



Frank Holmes’s Middle East experience, on the other hand, had been primarily filtered through the lens of commerce rather than geopolitics. He therefore approached the Arab leader with none of Cox’s presumptuousness, appealing instead to his pride and independence. Instead of diplomatic agreements and treaties, he offered a business deal. Holmes said a London investment group he represented, Eastern and General Syndicate, would pay the ruler £3,000 in gold a year (the equivalent of nearly \$300,000 in 2008) for the right to explore for oil in an area adjoining the Arabian Gulf in al-Hasa. Eastern and General also proposed terms that, if realized, would have presaged national oil company ownership in the modern era. The terms called for King ‘Abd al-‘Aziz to receive 20 percent of the capital of any company formed to exploit the concessions and a customs duty of 1 percent payable on the oil exported.

No power had a greater interest in maintaining the status quo in the Middle East in the 1920s than Great Britain. Even though Holmes was a former British Army officer, the British authorities took a skeptical view of his activities. If and when they felt the time was right to explore for oil on the Arabian side of the Gulf, they would do so through the Anglo-Persian Oil Company, of which the government was a majority owner and which had been created to develop the original oil discovery in Persia.

## The Politics of Rainfall

The availability of water affects all societies, but its scarcity had a particularly profound impact in Najd, where it shaped local intertribal politics for thousands of years. Even though most of the region is dry, it has several oases large enough to support permanent settlements, as well as a series of wells. Over the centuries, Bedouin tribes adapted to this unforgiving climate by following regular seasonal migration patterns from one grassy area to the next. This practice created tribal grazing areas, called *dirahs*, each claimed and adamantly defended by individual tribes.

*Dirahs* were a critical part of intertribal politics and often the focus of conflicts during droughts. As Ameen Rihani explained: “The rain in the Najd often solves a political problem. ... For if it falls in plenty and at the right time, the green pasture keeps the Arab in his dirah. But in a year of drought or little rain he has to move, seeking nourishment for himself and for his flock. And he has to take it wherever he finds it; often he has to fight for it. Hence the raids of one tribe by another. Hence the wars between the tribes. It is often a question of life and death, and politics have little or nothing to do with it. Politics in Central Arabia are often a pretext for war.” Early on, King ‘Abd al-‘Aziz understood that unity depended on tribal stability, and such stability would be impossible without long-term settlement, which would be dependent on ready and communal access to water.



According to mining engineer and photographer Karl S. Twitchell, Royal Decree gave Bedouins access to this well in the ‘Afif region during the unusually severe drought conditions of 1932. Disputes over water and grazing rights, which often turned bloody, posed a significant challenge to King ‘Abd al-‘Aziz’s efforts to unify the Bedouins and encourage them to settle in agricultural communities.

King ‘Abd al-‘Aziz likely saw the situation similarly to the way Rihani described it: “Here are two English Companies, one of them practically owned by the British Government, while the other has nothing to do apparently with politics, is free from all Government influence, and you have a right to have your own choice in the matter. ... The least of politics with capital the better for Arabia. Concessions given on a purely business basis and with a purely business motive, without any political tags to them or any lead pencil suggestions from British Officials concerning them—these are best for the Arabs and for the English.”

In fact, Anglo-Persian’s geologists had already determined that it was unlikely that oil existed in commercial quantities on the Arabian side of the Gulf. The rock formations in which oil was found in Persia in 1908 were not to be found on the Arabian side, they concluded. Sir John Cadman, Anglo-Persian’s chairman, declared that the reports generated by his company’s rock hounds “leave little room for optimism” that oil would be found in Arabia. Another director declared that the region was “devoid of all prospects” of finding oil.



Oil seeps, areas where oil reaches the Earth's surface naturally in the form of bitumen or asphalt, were found in numerous locations throughout the Gulf region, including Iran, Iraq, Kuwait, Bahrain and the Farasan Islands, just off Saudi Arabia's west coast. Seeps, such as the one pictured above at Harr in northwest Saudi Arabia in 1931, were not always a reliable indicator that readily accessible oil existed in commercial quantities in a particular location. British interests twice drilled for oil in the Farasan Islands without success.

Holmes's proposal reflected no such caution. In fact, anecdotal evidence indicates that he had long been convinced of the project's potential. Apparently, while on a beef-buying trip in Ethiopia for the British Army in 1918 and while stationed near Basra in what is now southern Iraq, Holmes had heard tales from Arab traders of oil seeps on the Arabian coast of the Gulf, though specific locations were not provided. Imbued with a hardy disposition and seemingly limitless energy, the stout engineer simply told anyone who would listen that there was oil to be found on the Arabian side of the Gulf.

In May 1923, King 'Abd al-'Aziz signed a concession agreement with Holmes that provided annual payments for the right to prospect for oil. The terms of the contract underscored the Arab ruler's wariness when it came to dealing with the British government. In winning the concession, Holmes and Eastern and General agreed that "the Syndicate shall not sell to the Anglo-Persian Oil Company, Ltd., either as to the whole or part thereof, any oil or mineral concession or concessions that may be granted by Your Highness to the Eastern and General Syndicate." Later that year, King 'Abd al-'Aziz sought private investment from Arab merchants with ties to Najd in the endeavor, sending a letter to the "people of Najd (living) in Baghdad," encouraging them to purchase shares in the newly formed corporation.

Weighing heavily in King 'Abd al-'Aziz's decision to grant the concession to Eastern and General was his determination to find out what, if any, natural resources lay beneath the Arabian sands. The entire idea was highly speculative: Yes, the British had discovered oil in the foothills of Iran far across the Gulf 15 years earlier, but most geologists scoffed at the notion that oil might be found on his side of the Gulf. A purely commercial operation, free of the machinations of British politics and driven by the same desires as his own—the acquisition of funds—would likely move with greater speed.

**"PURE GAMBLE"** Holmes brought in an outside expert, Swiss geologist Dr. Arnold Heim, to buttress his belief that oil lay beneath al-Hasa. Heim was a recognized expert on the movements within the Earth's mantle referred to as plate tectonics, but he had difficulty deciphering the salt flats and sands of Arabia. Reports later circulated that his expedition had been harassed by Bedouin tribes, limiting the length of his forays into the concession area. For whatever reason, Heim delivered a report that could not have been further from what Holmes had hoped. Heim declared that "the region shows no potential for oil whatsoever," concluding that prospecting for oil in al-Hasa would be a "pure gamble."

"When word of Heim's less-than-enthusiastic findings reached the financial capital [London], seeming to reinforce the previously negative view held by Anglo-Persian, further financing for Eastern and General all but dried up," noted Harry St. John Bridger Philby, a well-known desert explorer and a British political officer in Iraq who left the service to become a companion and close acquaintance of King 'Abd al-'Aziz. Eastern and General Syndicate made rental payments on the concession to King 'Abd al-'Aziz for two years. In May 1925, it fell behind in payments, and its concession was cancelled in 1927 after the syndicate failed to come up with the £9,000 it owed in back payments.

Even though this arrangement collapsed, it established a precedent in Arabia of using private funds to explore for natural resources. Six years later, the Saudi leader agreed to a concession agreement that would have lasting impact. And even though Major Holmes failed in his attempt to find oil in Arabia, he would be fondly remembered in the Gulf region as Abu al-Naft, "Father of Petroleum," for his dogged belief that oil could be found on the Arabian side of the Gulf when few others did.



Swiss geologist Dr. Arnold Heim was retained by Major Frank Holmes to gauge the prospects of finding oil in the al-Hasa region of eastern Arabia. He traveled with a team to the region in 1924, though it is not clear if he made it as far as the Dammam Dome. Despite claims that his travel was limited by harassment from Bedouin tribes, he offered Holmes a strong opinion that exploring for oil in al-Hasa was a "pure gamble."



After striking oil north of Kirkuk, Iraq, in October 1927, the Turkish Petroleum Company (TPC) expanded oil production even while negotiating the details by which a consortium of American oil companies would become part owners of the TPC the following year. By 1932, the processing facility shown here was one of several operated by the company.

**THE MODERN OIL INDUSTRY** The modern oil industry was born in the mid-1800s as scientists, in partnership with entrepreneurs in the United States and Europe, sought reliable and plentiful fuel for illumination. Whale oil had become an increasingly scarce and expensive commodity by the mid-1850s. Gas derived from coal and fuel distilled from turpentine proved expensive and inefficient.

Oil seeps in the wooded hills of western Pennsylvania in the United States, along the appropriately named Oil Creek, attracted the interest of investors and prospectors in the late 1850s. Prior to that time, oil in the United States had been used mainly for medicinal purposes by Native Americans and European settlers. As the potential use of this so-called "rock oil" as an

## “The Fire Temple”



William Knox D'Arcy.

William Knox D'Arcy was a born gambler. In the 1880s, he made a fortune as a young man by successfully betting that prospectors he financed could revive an old gold mine in Australia. Returning to his native England, he entertained lavishly at his London home and two country estates while backing various speculative ventures. D'Arcy became keenly interested in various attempts to find oil in Persia in the 1890s. He organized a syndicate and joined the fray in 1901.

Despite ample evidence from millennia-old asphalt seeps that crude oil existed beneath the Persian landscape, drilling for oil proved to be the greatest gamble of D'Arcy's career. He had to assemble a prospecting team from scratch, hiring George Reynolds, a veteran oil driller with experience in Sumatra, to lead the effort. Heavy equipment had to be shipped to the region via the Suez Canal and the Arabian Gulf, transshipped up the Tigris River to Baghdad, and then transported, often by mule train, across the rugged country to prospective well sites. After the equipment was on-site, Reynolds had to train laborers from among the local population, who had virtually no experience with such work. It was time-consuming, frustrating and very expensive. Within a few years, D'Arcy was scrambling for fresh funds and investors to help shoulder the rapidly escalating financial burden, and for an extended period of time the crews were producing nothing but dry holes.

Sections of pipe are hauled on iron-wheeled wagons pulled by teams of mules in Persia. After oil was discovered in 1908 at Masjid-i-Suleiman, a 209-kilometer pipeline was built to carry oil to the refinery at Abadan near the northern end of the Gulf.



The discovery well at Masjid-i-Suleiman ushered in the petroleum age in the Middle East.

By late 1907, D'Arcy's backers were willing to support one last attempt to find oil, this time in southwestern Persia. Reynolds chose a site in an area known locally as the “plain of oil,” where there were oil seeps. The specific site was called Masjid-i-Suleiman, near what some had speculated was an ancient Fire Temple. After being forced to build their own road into the region, the drillers finally got to work in January 1908, but progress was slow. Burmah Oil, a major co-investor in the enterprise, kept demanding D'Arcy invest more money in the project. When he failed to respond in time, Burmah Oil sent a letter to Reynolds, telling him to be prepared to pack up the equipment and abandon his quest. Fortunately, mail delivery from Burmah's headquarters in Glasgow, Scotland, to the untracked expanses of Persia took several weeks at best. The Burmah Oil letter was dated May 14, 1908. On May 26, Reynolds's crew struck oil. It took days to contain the resulting powerful flow of petroleum. He received the letter from Burmah Oil three weeks later.

D'Arcy and his investors reorganized his company as the Anglo-Persian Oil Company in 1909. The next step was to lay 209 kilometers of pipeline to carry the oil from the discovery well to a refinery that Anglo-Persian built at Abadan, near the northern end of the Arabian Gulf. The refinery operation proved nearly as troublesome and expensive as prospecting for oil, and Anglo-Persian was not on firm financial footing until 1914. At that point, after prodding Burmah Oil to support D'Arcy's efforts (in part to thwart Russia's attempts to extend its influence into the Gulf region), the British government bought a 51 percent stake in Anglo-Persian for £2.2 million and signed a long-term contract with the company to supply fuel oil to the Royal Navy.

energy source for lighting became apparent, the search for commercially viable reserves of oil began in earnest. In August 1859, after many false starts, a drilling crew under the direction of Edwin L. Drake struck oil at a depth of only 21 meters near Oil Creek, just outside Titusville, Pennsylvania.

**WWI AND OIL** The direct involvement of the British government in the Anglo-Persian oil venture was driven by the prospect of war. No one knew where or when the conflict would break out, or exactly who the combatants might be, but one thing was certain: The war machines would be driven by oil. In 1911 Britain's First Lord of the Admiralty, Winston Churchill, decided to convert the Royal Navy to more efficient oil power rather than coal, starting with its smaller destroyers and ships. The U.S. Navy followed suit.

Churchill was also interested in supporting Anglo-Persian as an oil producer to foster competition, which would result in lower oil prices globally. Even with war looming, he was especially intent on countering what he considered the monopolistic tendencies of Standard Oil, based in the United States, and the Royal Dutch–Shell Group. In arguments preceding the government purchase of its controlling stake in Anglo-Persian, Churchill told the House of Commons in June 1914



The post-World War I boom in automobile use spread from the United States to Europe, as can be seen in 1920s Paris.

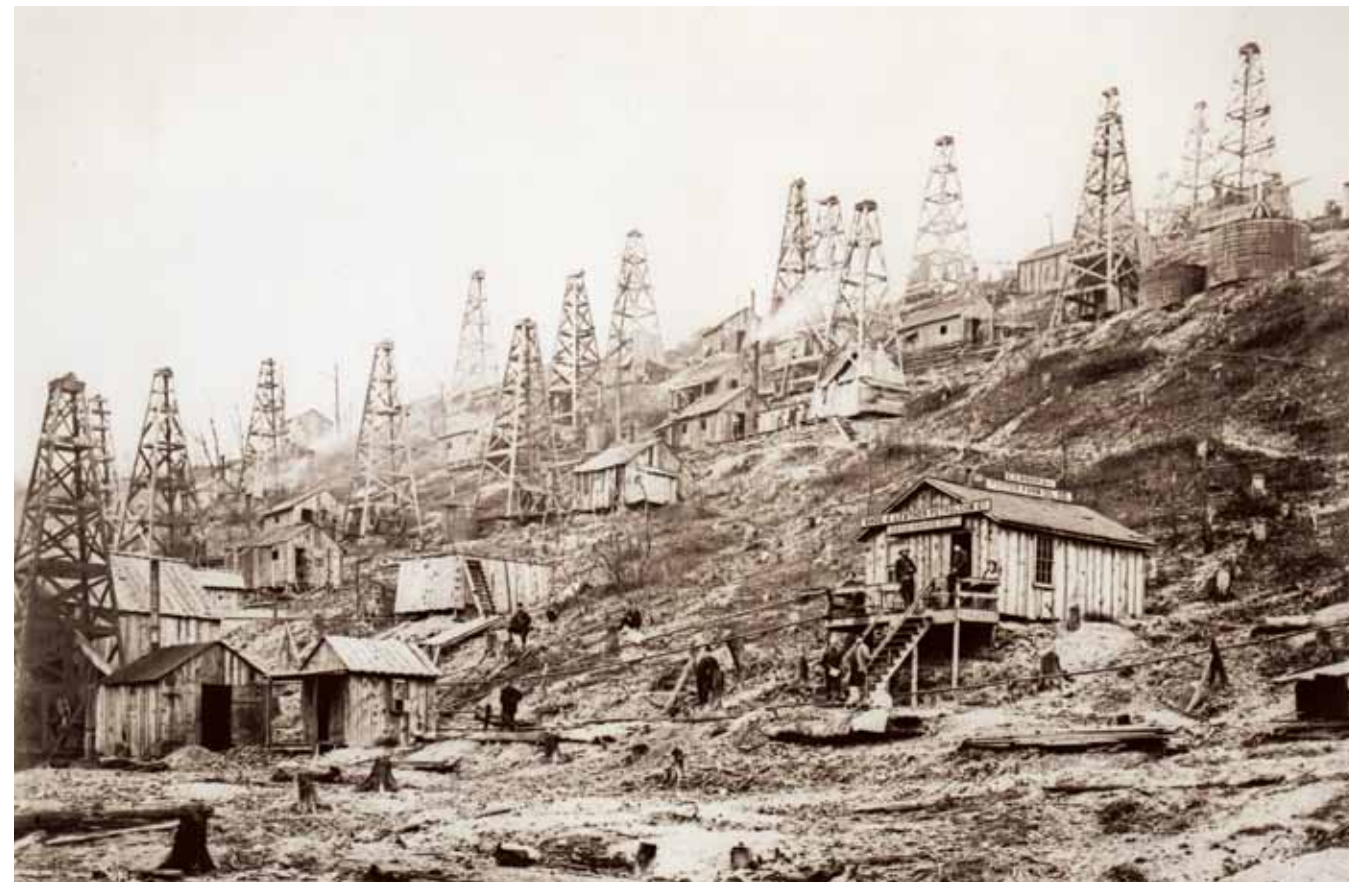
that not only the British Admiralty but all oil consumers had suffered “a long steady squeeze by the oil trusts all over the world.” (However, the need to coordinate oil deliveries to the Allies during the war by Standard Oil of New Jersey, the largest remaining component of the Standard Oil trust after it was dissolved in 1911, and Royal Dutch–Shell, did much to soften Churchill’s aversion to such arrangements.)

Britain was anxious to ensure that it had at least some oil available in the Gulf, especially after the Ottoman Empire (which included most of the area bordering the Gulf, with the exception of Persia) sided with Germany and its allies in the fall of 1914. Indeed, British troops repelled Turkish soldiers who attacked Anglo-Persian’s Abadan refinery on November 6, 1914.

The United States remained the world’s largest oil producer throughout World War I and for decades afterward. It was the main supplier to its British ally, even though oil tanker losses at sea led to periodic oil shortage fears during the war. Standard Oil of New Jersey, referred to simply as Jersey, alone provided 25 percent of the Allies’ oil supplies. Lacking secure supply lines, the German war machine often had to ration oil, especially following the destruction of Romania’s oil fields by the Allies in 1916. The Germans’ ultimate failure in the fall of 1918 to seize the oil fields near Baku, then in southern Russia and today the capital city of Azerbaijan, which had been secured only a few months earlier by the British, was a key factor in Germany’s surrender that November.

**When crude oil was discovered in western Pennsylvania in 1859 at a depth of 21 meters, it took only a few months for prospectors to flood the area in an attempt to strike it rich. The local forests were leveled and transformed into a “forest” of drilling derricks and shantytowns. Logs were also hollowed out and used to construct pipelines to nearby railheads.**

**RED LINE AGREEMENT** The great powers of Europe had focused on the territories of the Ottoman Empire as potential sources of oil long before World War I even started. Germany had acquired oil exploration rights near Baghdad in 1888 and again in 1904, while Deutsche Bank was constructing the Berlin to Baghdad Railway. These rights were cancelled in 1907, the year before William Knox D’Arcy’s team found oil in Persia, even though Deutsche Bank never accepted this annulment. Once the discovery at Masjid-i-Suleiman became well known, investors looked to replicate it elsewhere in the region.



The Turkish Petroleum Company (TPC) was created in 1912 by competing British and German interests in the region, as well as by those of Royal Dutch–Shell, with a small stake held by Calouste Gulbenkian. He was a wealthy Armenian oil industry expert, who was both major shareholder and a director of the British-backed National Bank of Turkey and instrumental in brokering the oil deal. The grand vizier of Turkey granted an oil concession to TPC for the areas near Baghdad and Mosul in June 1914, though with the prospect of a war between the Great Powers looming, no action was taken to explore the concession for years. Also in 1914, the British stake in the enterprise was transferred to the Anglo-Persian Oil Company. During and after the war, negotiations between the British and French led to the eventual transfer of mandates in portions of the former Ottoman Empire, notably the control of the Mosul area, from France to Britain, creating present-day Iraq, albeit under British control. Following the war, German interests in TPC, which were seized by Britain, were transferred to France’s Compagnie Française des Pétroles. The TPC’s composition was split among Anglo-Persian, Royal Dutch–Shell, Compagnie Française des Pétroles and Gulbenkian, whose share in the cartel earned the dealmaker the sobriquet “Mr. Five Percent.”

American oil companies wanted to join the cartel. They argued their request was justified since the United States had joined the war against Germany and its allies. However, America was still neutral in 1916 when France and Britain originally divided the region into mandates, and the request was denied. Nonetheless, American interests single-mindedly pursued a stake in Middle Eastern oil production. Citing the philosophy that became known as the “Open Door Policy,” they argued that their wartime allies were unfairly blocking access to Middle Eastern oil by falling back on their mandates. After all, the Americans pointed out, foreign companies had little difficulty investing in the United States. Case in point: Royal Dutch–Shell’s U.S. production at the time was 50 percent greater than Jersey’s.

**Russia was an early global oil-producing power. Much of its petroleum came from a giant oil field in Baku on the Caspian Sea (part of present-day Azerbaijan), shown here in 1901. Attempts to gain control over the oil-rich Baku region played a key part in German strategy during both world wars.**



In 1922, five U.S. oil companies—Jersey, Atlantic Refining Company, Gulf Oil Corporation, Pan American Petroleum and Transport Company, and Standard Oil of New York (Socony)—formed the Near East Development Corporation (NEDC) in an attempt to participate in Middle Eastern oil exploration. Lengthy negotiations in corporate boardrooms and on country estates ensued as the American and European companies jockeyed for advantage. TPC and the U.S. companies reached a tentative agreement regarding American participation in the TPC consortium shortly before the government of Iraq granted the cartel an oil concession in March 1925. The specifics of American participation in TPC remained to be negotiated, but were resolved later once the concession had been explored.

While lawyers and business representatives for the parties argued, a joint geological expedition with European (TPC) and American (NEDC) representatives began prospecting in the Kirkuk area of northern Iraq in 1925. Word quickly reached the U.S. and European oil companies' headquarters that the geologists were optimistic about striking oil. Drilling began in April 1927. The geologists' enthusiasm proved dramatically understated. On October 15, 1927, drillers working 10 kilometers northwest of Kirkuk struck oil after drilling little more than 450 meters. Oil gushed more than 15 meters into the air, and local tribesmen were hastily recruited to build dams to contain the massive overflow. The well at Baba Gurgur, which was not brought under control for almost nine days, flowed at a rate of 95,000 barrels per day, making it one of the most prolific wells drilled anywhere in the world at that time.

Presented with a fait accompli by their geologists and drillers, the negotiators for American and European interests realized they had to close the deal. After six years, they finally agreed on July 31, 1928, to restructure TPC to give NEDC and the three original European owners each

a 23.75 percent share of the company. The remaining 5 percent interest in the newly enlarged conglomerate was still held by Gulbenkian.

While reconfiguring TPC, the participating global oil powers also crafted what was known as the "Red Line Agreement," for which Gulbenkian is usually given credit. This was based on the earlier agreement crafted by the original members of TPC before the onset of World War I. The leaders drew a line around the former Ottoman Empire on a map. Each member of the consortium agreed that it would not prospect for oil in this region except as part of a joint endeavor with the group. The region excluded Kuwait and Persia. Significantly, however, it did include the entire Arabian Peninsula and Bahrain. The next year, 1929, the consortium of global oil powers renamed itself the Iraq Petroleum Company (IPC).

The Kirkuk discovery and subsequent finds in Iraq established that country and neighboring Iran among the world's most promising oil regions. They also underscored the fact that was becoming increasingly obvious to leading oil companies: The world was awash in oil. Global oil production soared from 2.9 million barrels per day in 1925 to more than 4.0 million by 1929.

Technological advances also had an impact on the demand for crude oil. Improvements in the distillation of oil through thermal cracking, developed by Standard Oil of Indiana in 1913, nearly doubled the amount of gasoline that could be produced from a barrel of oil. The global demand for automobiles boomed after World War I. The number of cars on the road in America multiplied nearly sixfold from roughly 4 million to more than 23 million by the end of the 1920s.



**SELECTED MAJOR WORLD OIL DISCOVERIES  
1859-1939**

**KEY**

- |                                  |                                       |                                    |                                    |
|----------------------------------|---------------------------------------|------------------------------------|------------------------------------|
| 1 Titusville, Pennsylvania, 1859 | 7 Comodoro Rivadavia, Argentina, 1907 | 12 Permian Basin, West Texas, 1921 | 17 Jabal Dukhan, Bahrain, 1932     |
| 2 Baku, Azerbaijan, 1871         | 8 Masjid-i-Suleiman, Iran, 1908       | 13 Lake Maracaibo, Venezuela, 1922 | 18 Burgan, Kuwait, 1938            |
| 3 Sumatra, 1885                  | 9 Tampico, Mexico, 1910               | 14 Seminole, Oklahoma, 1926        | 19 Dammam Dome, Saudi Arabia, 1938 |
| 4 Borneo, 1897                   | 10 Calgary, Canada, 1914              | 15 Baba Gurgur, Iraq, 1927         | 20 Dukhan, Qatar, 1939             |
| 5 Spindletop, Texas, 1901        | 11 Signal Hill, California, 1921      | 16 East Texas, 1930                |                                    |
| 6 Tulsa, Oklahoma, 1905          |                                       |                                    |                                    |



Socal geologists who later played key roles in finding oil in Saudi Arabia pose together near Venezuela's Maracaibo oil fields in 1927, including R. P. "Bert" Miller, second from left; Schuyler B. "Krug" Henry, third from left; Allen White, fifth from left; and Max Steineke, sixth from left—characteristically in the middle of things, but uncharacteristically wearing a tie.

Despite this growth, America's production still outpaced demand. In Europe the demand for oil also surged, driving American oil companies to seek new oil fields in the Eastern Hemisphere.

By the spring of 1930, however, global oil prices turned lower. Economies around the world slumped into the Great Depression. A barrel of oil, which was selling for approximately \$3 in the United States in the early 1920s, was selling for \$1.15 per barrel in 1927 and as low as 12 cents a barrel by 1931. The world's most successful international oil producers cut back on expenses wherever they could to survive one of the darkest periods in modern economic history. They had no idea what they were about to miss.

**GAINING A Foothold in Bahrain** Judged by the standards of the time, oil exploration history was about to be made by two industry also-rans. Standard Oil Company of California (Socal), despite its best efforts, missed out on every large non-U.S. oil find during the 1920s. Meanwhile, Holmes, still smarting from his failure to find oil in al-Hasa, was casting about for additional oil concessions and companies to buy them. The paths of Socal and Holmes crossed improbably on the tiny archipelago of Bahrain.

Bahrain was noted on world maps, though, as one U.S. oil executive huffed, the grouping of rocky islands was so small he could cover it on a map with the tip of his pencil. The country

hardly loomed any larger as a likely candidate on which to find oil. The oil industry establishment's view of Bahrain was summed up by a well-known British geologist, George Madgwick, in 1926. Though he personally encouraged exploratory drilling for oil on Bahrain, he was cautious when it came to holding out much hope of a discovery there, or on the nearby coast of what would become Saudi Arabia, based on the track record of the industry in the Gulf region to date:

Bahrain and the adjacent coast must stand on its own merits and may not be regarded as a possible extension of the fields of Persia, because the Miocene rocks, which in the latter country play the principal role in the oil formation ... are not present in Bahrain. ... The tectonics of the two regions are quite dissimilar.

**Socal's International Expansion** Socal had operated as a successful domestic oil company since being created out of the dissolution of Standard Oil in 1911. By the 1920s, Socal had some of the largest domestic oil reserves of any U.S. producer. Starting in 1919, when the United States faced postwar oil shortages, the company had answered the U.S. government's call to prospect overseas for fresh reserves. Socal's vice president Maurice Lombardi recalled that, worried about how long their domestic reserves would last, the company's "executives had thought of its California supply of oil as a wasting asset and

had started looking for new fields as part of their long-range planning.” So began a decade of disappointment.

Socal’s inability to find oil internationally could not be attributed to lack of talent. Socal’s geologists and drillers were ranked among the best at the time. The company simply failed during the 1920s to replicate overseas the success it had experienced drilling for oil in its corporate backyard of California. Consequently, Socal was not considered a top-tier international oil industry producer during the 1920s and was not invited to join the group of five U.S. companies that formed NEDC.

Socal’s failure to make the international grade contained an unanticipated bonus. It meant Socal was not bound by the Red Line Agreement restrictions on independent prospecting by IPC members. It was free to prospect for oil in Bahrain and what would become Saudi Arabia. Smarting from being kept out of the IPC deal, an exclusion they felt had been driven by their Standard Oil siblings on the East Coast, Socal executives, led by their president, K. R. Kingsbury, had something to prove. After meeting with IPC officials in London at one point during the 1920s and being told that Socal would not be asked to join the NEDC, Kingsbury reportedly told Socal officials, “O.K., let’s get into the foreign business ourselves!”

**THE BAHRAIN CONCESSION** Even as his initial foray into Arabia was still in the early stages, Holmes was already turning to fresh ventures, this time in Bahrain. In 1924, he contracted with *Shaykh* Hamad ibn ‘Isa Al Khalifah of Bahrain on behalf of Eastern and General to drill for water on the archipelago. He brought in 16 wells. Holmes so pleased the *Shaykh* that in late 1925 he secured for Eastern and General an exclusive option to prospect for oil on more than 12,300 hectares, or nearly 20 percent of Bahrain’s total area, and a promise to enter into further negotiations for the remaining territory. It was not a difficult negotiation. The *Shaykh*’s fortune was secured by the legions of pearl divers bringing up their precious catch from the shallow waters off Bahrain, who pulled in as much as \$10 million annually during the peak pearling years of the 1920s. The *Shaykh* was not in immediate need of cash. Furthermore, he surely was aware of the British government’s dim view of oil prospects in the area and had not been led to believe that anything had changed. In accordance with a 1914 agreement he had made with the British government, he submitted the Eastern and General concession deal for review to the local British political agent. The British Colonial Office gave its approval in due course.

Holmes began searching for an oil company to buy the Bahrain concession. Financiers in London were much more interested in pumping money into Iran and Iraq, where Anglo-Persian was focusing its efforts and geological teams were sending back promising reports. He turned to America and contacted both Jersey and Gulf Oil, whose name derived from its early oil finds near the Gulf of Mexico in Texas. In November 1927, Eastern and General signed a contract with Gulf Oil on behalf of its Eastern Gulf Oil Company affiliate for Bahrain.

In January 1928, Eastern Gulf Oil sent geologist Ralph “Dusty” Rhoades to prepare a geological survey of Bahrain. Rhoades’s carefully rendered survey confirmed the existence of a large anticline, or dome, underlying much of Bahrain, which had been noted in British reports on the island’s geology as early as 1908. He also confirmed the existence of asphalt seeps on the crest of the dome, similar to seeps found in Kuwait, though much smaller in scale. He completed his work before the end of May and the beginning of the suffocating summer heat, and proposed two locations for test wells.

The report made its way back to Gulf Oil headquarters in Pittsburgh, Pennsylvania, but was rendered moot in a matter of weeks by the signing of the Red Line Agreement. Gulf Oil was one of the U.S. members of the IPC. That meant Gulf Oil and its affiliates could not prospect for oil independently inside the region defined by the Red Line Agreement.

Could the other Red Line Agreement signatories be convinced to jointly prospect for oil in Bahrain? Gulf took the idea to its fellow American members of NEDC. Jersey liked the idea, so in October 1928, the concept was forwarded to the other members of the European consortium enforcing the Red Line Agreement. Sir John Cadman, chairman of Anglo-Persian and TPC,

dismissed the offer out of hand while attending an American Petroleum Institute meeting in Chicago in late 1928. The European members had already declined Eastern and General’s offer of the concession on Bahrain, Cadman noted, and the consortium’s latest geological reports had not produced any new information to alter their opinions. As a result, Gulf Oil had no choice but to get out of the Bahrain concession.

Not everyone at Gulf Oil had thought that prospecting in Bahrain was a good idea in the first place. The most conspicuous dissenter happened to be the most powerful man in the company, board member Andrew Mellon, whose family controlled most of the company’s stock. Mellon, who later served as U.S. ambassador to Great Britain in 1931–32, thought Gulf Oil already had enough trouble trying to find storage tanks for its Texas production. “With an overabundance of Texas production, Gulf didn’t want to retain this concession, which Mellon said his geologists had talked him into in the first place,” Socal’s Lombardi later recalled.

Furthermore, Mellon thought the family fortune should remain concentrated in banking, and so he began exploring a merger of Gulf Oil with another oil producer. To avoid running afoul of U.S. antitrust law, he limited his search to companies with few overlapping markets. Mellon approached Socal’s Kingsbury in 1928 to sound him out about such a merger, which would involve Socal and its younger management team taking active control of the combined companies. With Socal’s business concentrated on the U.S. West Coast, and Gulf Oil’s business mostly in the south and east, the deal did not appear to raise antitrust concerns. After several discussions, however, the two executives agreed that such a deal would still leave the Mellons with control of the companies, given the size of their Gulf Oil stock holdings. “This would serve to defeat Mellon’s primary purpose of getting out of the oil business as an active participant, and so no agreement ever was concluded,” according to internal Socal documents.



Socal Vice President Maurice E. Lombardi was one of the most persistent executives to push for a company foothold in the Gulf region. He encouraged Socal President K. R. Kingsbury to buy the Bahrain oil exploration concession from Gulf Oil and a few months later began ceaselessly advocating that Socal secure a concession to explore for oil in Saudi Arabia.



Jubail, shown here in 1935, was the primary port on Saudi Arabia’s Gulf coast. The lack of roads and other infrastructure posed a serious challenge to any oil company interested in exploring the region.

Jiddah, located on the Red Sea coast, served as the port for the Holy City of Makkah. For centuries, Jiddah, seen here in 1933, was Saudi Arabia's commercial capital and its window to the outside world.



The two executives parted on good terms. Shortly after the proposed merger fell through, Mellon contacted Kingsbury again, this time offering him the Bahrain concession Gulf Oil had acquired from Eastern and General for the amount the Gulf Oil subsidiary had spent on its geological survey—roughly \$50,000. As internal Socal documents related:

Kingsbury liked Mellon very much, and wanted to continue their friendly relations, now that the merger was not going through. He obtained from Gulf a contour map of the island and asked Lombardi what he thought of it. Lombardi says he didn't even know where the Persian Gulf was, but he could see, as any one might, that here was a perfect anticline. He noted also the name of a 'Dusty' Rhodes as the geologist who had drawn up the map. Lombardi knew him as a very competent man, so he asked Kingsbury, 'How much for this concession?' When Kingsbury told him \$50,000, Lombardi said, 'I think it's worth a try.'

Despite its unsuccessful efforts to join what as of 1929 was known as the IPC oil cartel, Socal and Kingsbury had secured a vehicle for prospecting for oil in the Middle East. The U.S. company, however, then had to contend with a potentially even more formidable foe, the British government. Bahrain was not technically a British protectorate, but it functioned as such in all but name.

In parrying Socal's initial months-long attempts to establish a presence on Bahrain, the British Colonial Office had cited a "British nationality clause" in agreements it had signed in the run-up to World War I with the Gulf nations of Bahrain and Kuwait, in which the rulers had agreed that such concessions would go only to British interests.

Under intense pressure from the U.S. government, and realizing that it might be in everyone's interest to have American capital flow into the region to help develop a resource that was crucial to the future success of the British Navy, the British relented, allowing the Bahrain concession agreement to go forward.

Socal's entrance into Bahrain did not come without conditions. The agreement with Britain required the company formed to exploit the concession to follow several provisions that gave the British significant oversight of the company's affairs. The agreement specified that the company remain a British entity, with the chairman, managing director and majority of other directors on the board all British subjects. Furthermore, the local general manager, and as much of the local staff as possible, had to be subjects of either Britain or Bahrain. The most significant part of the agreement prohibited the company holding the concession from becoming directly or indirectly controlled or managed by foreigners or by a foreign corporation.

On August 1, 1930, with economic activity in steep decline around the world, Socal finally assigned the concession to the Bahrain Petroleum Company (Bapco), its newly minted subsidiary that was registered in Canada to comply with the agreement. Exploratory drilling started that October. Like many companies around the world, Socal was tightening its belt. The Bahrain site contained the only exploratory well the company drilled outside the United States during that Depression year. It proved to be a very good choice.

**LOOKING TOWARD ARABIA** Geologists are nature's historians. More comfortable in dusty boots than tweed jackets, they find their primary texts on bare land, in landscapes that often only hint at their meaning and significance. Fred A. Davies did not appreciate it at the time, but the young American geologist, trained to study evidence from ages past, was catching a glimpse of the future. One afternoon in the spring of 1930, he stood at Bahrain's highest point. Socal had sent Davies and William F. Taylor, general superintendent of its foreign division, halfway around the world to size up the likelihood of finding oil on the archipelago on behalf of the company's Bapco subsidiary. At the moment, however, Davies was not focused on the rocks beneath his feet.

While surveying Bahrain's Jabal Dukhan, about 131 meters above sea level, and other potential prospects in the archipelago, Davies could see the outline of a group of tan-colored hills, or *jabals*, that looked similar to the one on which he was standing. The hills rose a few kilometers beyond the sparsely populated eastern shores of mainland Arabia, about 40 kilometers across the Gulf. If, as his geological training led him to suspect, the underground structure created millions of years ago beneath his feet on Jabal Dukhan might be trapping oil, then the rocky, dome-like formation over on the mainland might also contain oil. And if that were true, oil could possibly be discovered in many other poorly mapped reaches of Arabia.

Leaving Bahrain after choosing a spot for Bapco's first exploratory well, Davies sent a telegram to G. Clark Gester, one of Socal's two chief geologists at company headquarters in San Francisco. Davies urged Socal to extend the drilling concession to the Arabian mainland as well because of the similarities in surface geology. He had been frustrated by his inability to get permission to visit the mainland during his visit to Bahrain. That telegram marked the first official mention by a Socal employee of exploring for oil in what would soon become Saudi Arabia.

Corporations are cumbersome creatures. Socal lawyers had spent months hashing out the details of the Bahrain concession and expended an equal amount of time clearing hurdles imposed by the British government. Despite organizational exhaustion and distraction, a handful of Socal's more adventurous executives, notably Vice President Lombardi and Dr. Jorgen "Doc" Nomland (who shared chief geologist duties with Gester), kept al-Hasa in their sights. As Davies wrote to a friend, "We thought there well might be oil possibilities in that vastly larger area of the mainland."



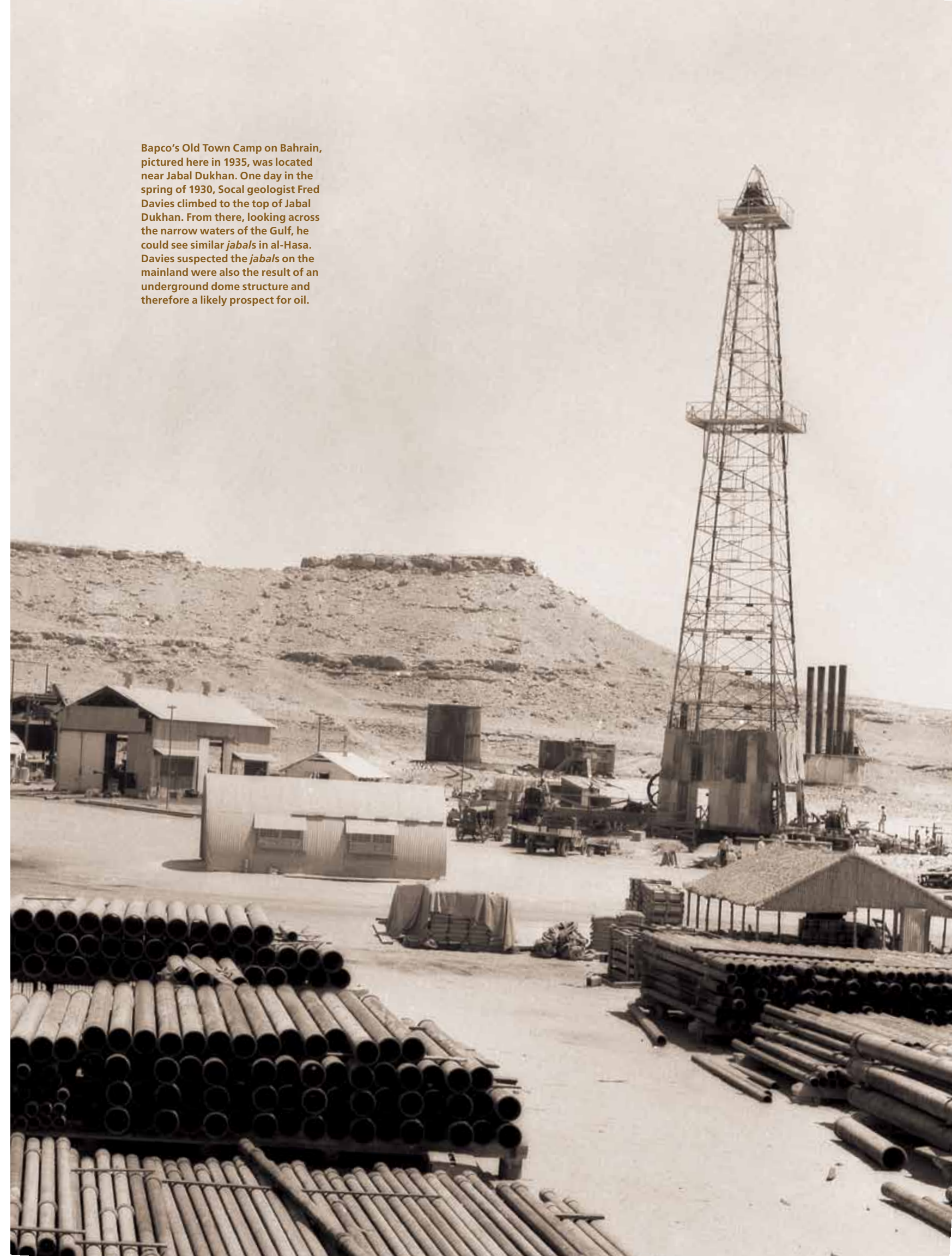
Fred A. Davies, shown here in 1935, was one of Socal's first geologists to survey for oil prospects in Bahrain and helped site the first well. Davies later transferred to Socal's operations in Saudi Arabia and rose to the top ranks of the company.





The Bahrain Petroleum Company (Bapco) served as a proving ground for many future officers of Socal in Saudi Arabia. Those leaders included Bapco Manager E. A. "Ed" Skinner, far left, and William Eltiste, fourth from left. Next to Skinner is Major Frank Holmes, whose insistence that oil could be found in Saudi Arabia was later proved to be spectacularly correct.

It was three years before King 'Abd al-'Aziz granted Socal the right to prospect for oil on the Arabian mainland. Appropriately, when exploration commenced, it was on the *jabals* that Davies, who later headed the company's effort in Saudi Arabia, first identified from Bahrain. Davies's almost casual observation years earlier set in motion a relationship that was anything but casual for either the company or the country. Little did anyone know that within just a few decades, Saudi Arabia would possess the largest crude oil reserves by far of any nation in the world. Eventually, the partnership between American private enterprise and the Saudi government and people evolved into something quite extraordinary.



Bapco's Old Town Camp on Bahrain, pictured here in 1935, was located near Jabal Dukhan. One day in the spring of 1930, Socal geologist Fred Davies climbed to the top of Jabal Dukhan. From there, looking across the narrow waters of the Gulf, he could see similar *jabals* in al-Hasa. Davies suspected the *jabals* on the mainland were also the result of an underground dome structure and therefore a likely prospect for oil.

CHAPTER TWO

# Negotiations



Mining engineer Karl Twitchell's caravan near Riyadh in 1931.



Saudi Finance Minister 'Abd Allah Al-Sulayman and Lloyd N. Hamilton, attorney and principal negotiator for Socal, sign the concession agreement at the Khuzam Palace on the outskirts of Jiddah on May 29, 1933.

As the 1930s began, King 'Abd al-'Aziz faced critical choices. He was keenly aware of the increased interest in oil in the Gulf region sparked by the finds in Persia and later Iraq, and the drilling in nearby Bahrain. At the same time, while pondering how best to develop his domain's potential natural resources, he confronted an even more pressing concern.

King 'Abd al-'Aziz and his people were feeling the effects of the global economic downturn. Fewer Muslims could afford to make the pilgrimage, or Hajj, to the holy places in Makkah in western Arabia. These religious visitors were the largest source of income for the country, and the downward trend in their numbers and in the international economy showed no sign of reversing itself. As recently as 1927, 132,000 journeyed from around the world to Makkah, and many if not most of these continued on to the Holy City of Madinah. That figure dropped to 85,000 by 1930 before bottoming out at just under 20,000 in 1933.

King 'Abd al-'Aziz knew he would see no progress in realizing his country's aspirations until he gained access to two essential resources: foreign capital and technical expertise. To accomplish this, he sought the advice and help of those who respected his vision. One was Harry St. John Bridger Philby. Philby, raised on a coffee plantation in Ceylon and educated in England's best schools, was a well-known Arabian desert explorer who had also been a British political officer and a member of Britain's Indian Civil Service. Now a private citizen, he had converted to Islam as of August 1930 and taken on the name 'Abd Allah. One afternoon in the fall of 1930, Philby was accompanying King 'Abd al-'Aziz on an automobile ride near Jiddah. As the two discussed the country's financial situation, Philby broached a sensitive subject, as he recalled years later in one of his many books on Arabia: "I said I had no doubt whatever that his enormous country contained rich mineral resources, though they were of little use to him or anyone else in the bowels of the earth. Their existence could only be proved by expert prospection, while their ultimate exploitation for the benefit of the country necessarily involved the cooperation of foreign techniques and capital."

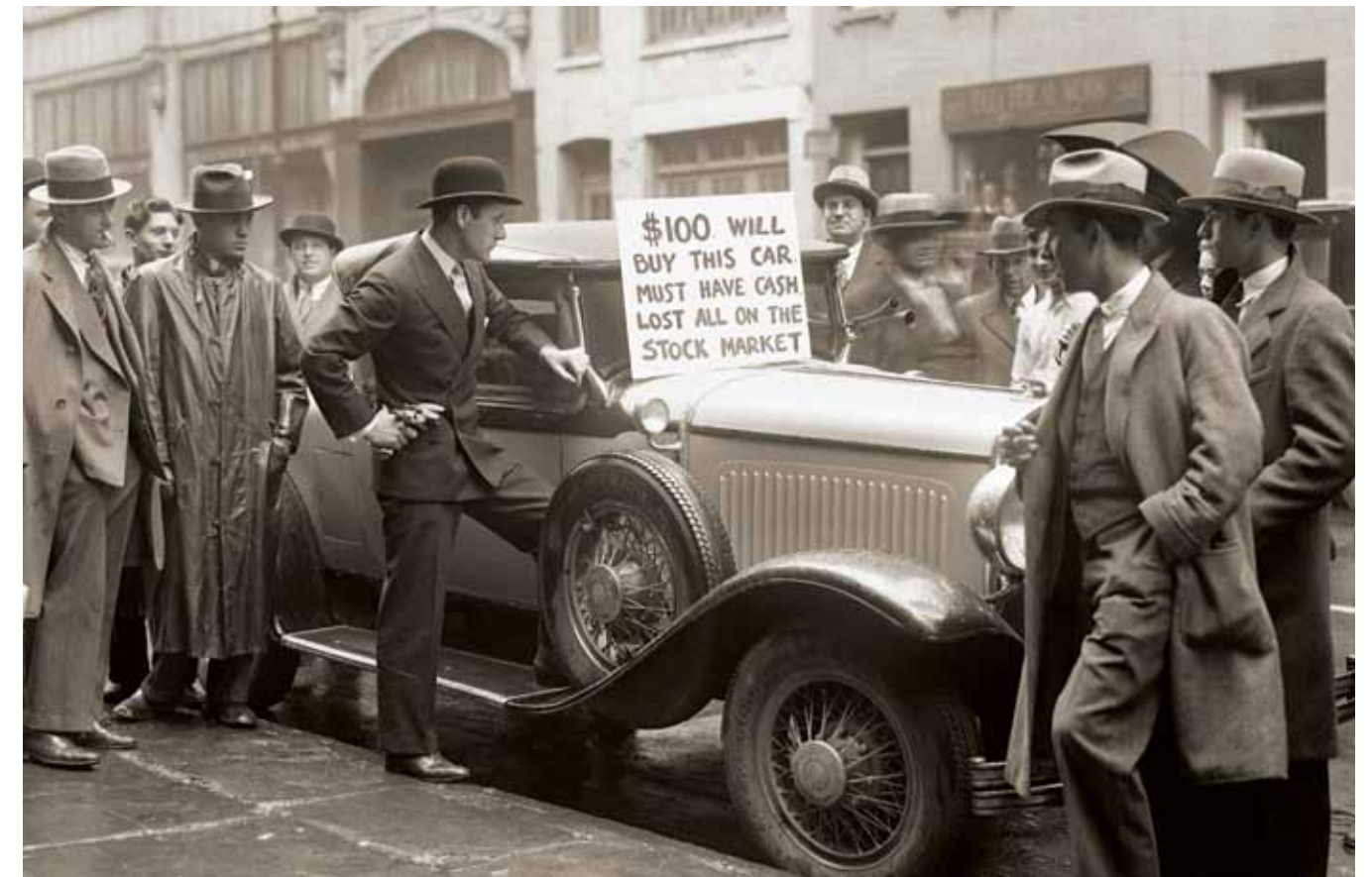
King 'Abd al-'Aziz was already a firm believer in the natural resources potential of Arabia. This was evident in the language of his letter to his countrymen living in Iraq, encouraging their investment in the concession agreement he made with Eastern and General in 1923. However, sharing the suspicion of outside influence characteristic of the inhabitants of central Arabia, he had witnessed Frank Holmes's failure to keep up payments on the agreement and was clearly skeptical of foreign "offers" of assistance. Yet he also was in the mood to listen.

**INFORMATION NETWORK** The Saudi ruler had a thirst for reliable information. Dozens of loyal merchants doing business across the region served as his eyes and ears. He knew the world around him was changing dramatically, and that he could not let old issues blind him to new possibilities. King 'Abd al-'Aziz had long understood that strong leadership required an abundance of accurate and balanced information. A decade earlier, after the British political officer in Kuwait, Colonel H. R. P. Dickson, visited King 'Abd al-'Aziz, he remarked, "First and foremost, I should like to mention that the thing which has struck me most in conversation with Bin Saud has been the efficiency of his intelligence system. He appears to be in closest touch with Egypt, Syria, Hijaz, India and Iraq, and there was little I could tell him which he hadn't a thorough knowledge of already. ..." There is little doubt, given his regional contacts, that as of 1930 King 'Abd al-'Aziz was well aware of the major oil finds in Persia and more recently at Kirkuk in Iraq, both developed with foreign capital and expertise. That made it easier for him to agree to the same with his nation's resources, despite his previous experience with Holmes and his syndicate.

However, King 'Abd al-'Aziz was a realist. He understood that with the world spiraling into economic depression, the demand for oil was in decline. An appropriate first step was to find a sympathetic outsider who could aid in determining the scope of his domain's buried resources. Philby had just the man in mind. And that man just happened to be in the region.

Philby told King 'Abd al-'Aziz about a millionaire philanthropist, Charles R. Crane, who along with Oberlin College President Henry C. King, had led a commission to survey the wishes of the peoples of the former Ottoman Empire after World War I for U.S. President Woodrow Wilson. Philby explained that Crane had spent many years funding development efforts in the Middle East and Asia and had wanted to meet King 'Abd al-'Aziz for some time. In fact, Crane was in Egypt as they spoke, having recently visited Yemen to oversee a variety of water, agricultural and other development projects he was funding.

Farmers in Yemen benefit from a gift of farming equipment donated by American philanthropist Charles R. Crane, a longtime supporter of development efforts in the Middle East. Crane visited Yemen in the winter of 1926 and arranged for engineer Karl S. Twitchell to assess the country's natural resources. After Crane met King 'Abd al-'Aziz in 1931, he offered Twitchell's services to the monarch.



The Saudi ruler agreed to meet Crane in Jiddah after the coming pilgrimage. As Philby recalled:

In due course Mr. Charles Crane, the American millionaire philanthropist, accompanied by Mr. George Antonius [a Palestinian who served as Crane's interpreter], arrived at Jiddah, and had the honor of adding Ibn Saud to the long list of royalties and other great folk he had met personally during half a century of globe-trotting. And for that honor he duly paid in the best coin he could possibly have devised. He undertook to place at the disposal of Ibn Saud's Government, free of charge, the services of an expert mining engineer, who had worked for him in Abyssinia, the Yaman [Yemen] and elsewhere, for a period of six months. It was thus that Mr. [Karl] S. Twitchell first came to Saudi Arabia to find the buried treasure, ... whose existence I had hinted at [during] the darkest moment of the country's economic depression.

U.S. stock market selling reached a crescendo on "Black" Monday and Tuesday, October 28-29, 1929, as investors traded more than 25 million shares in a frantic rush to dump stocks. The market lost 25 percent of its value in just two days. Many investors, such as the man shown here on October 30, tried to cover their losses by selling any assets they had available.

Crane's arrival at the Saudi court in late February 1931 was the perfect matching of men and moment. Crane, who had studied Islam and had paid to have the Quran translated into English (see "Charles R. Crane," p. 40), was impressed with the leader's sincere aspirations for his country and countrymen. Crane had visited Arabia twice in the 1920s but had failed to gain an audience with King 'Abd al-'Aziz. This time, however, the men spent hours over the course of a week discussing their views on the needs, spiritual as well as material, of developing societies in general, and the Saudi people in particular.

Crane sensed in King 'Abd al-'Aziz an intriguing combination of the philosophical, the altruistic and the realistic. He saw a leader who was philosophical enough to foster a great vision and altruistic enough to believe that prosperity must be shared by his subjects. These attributes were bolstered by a determined pragmatism that went hand in hand with the understanding that nothing can happen without good information and careful planning. During their conversations, King 'Abd al-'Aziz revealed that he had already ordered that test borings for artesian wells be



Riyadh's *sug*, or open-air market, bustles with activity in November 1933, as seen here from the wall of the adjacent palace.

carried out in the Ras Tanura area on the Arabian Gulf coast. It was a logical location, as coastal residents and pearl divers in the area for centuries had been collecting fresh water in goatskins from undersea artesian springs between the mainland and the coast of Bahrain as well as from similar springs on land. Indeed, finding new sources of water for his subjects and pilgrims was as much if not a greater priority for the country than prospecting for oil or mineral resources.

King 'Abd al-'Aziz's philosophy on development set the standard for his successors. He told Crane that, from what he had heard, the recent accelerated urbanization and Westernization in Egypt were going against the natural fabric of Arab culture in that country. According to Antonius, "The King went on to say that, in his beliefs, the soundest progress was that which moved cautiously without attempting to outpace the natural growth of the traditional life of the country."

In his conversations with Crane, as Antonius noted, King 'Abd al-'Aziz referred to his approach to the Hijaz, which he had incorporated into his domain only five years earlier:

The King said that when he came to the Hejaz about five years ago, he had realized that he would have to give his attention to three questions, namely public security, public health, and economic prosperity among the Bedouin. All three were of fundamental importance. The first, because unless the people were secure and felt secure in their lives and property their life would be one of mental torture and they would not be fit to attend properly to their pursuits. The second, because disease, if it is allowed to spread, might ruin a whole community, however civilized and otherwise prosperous it might be. The third, because economic prosperity was the best incentive to useful work.

He had put these things foremost in his program, not because he believed them to be the most important things in life, but because he regarded them as the necessary foundation for the other things. Spiritual values, in his belief, were ultimately more important, but they could scarcely flourish in a people who have had to live in disease, insecurity and poverty. As for education, he thought that it's real and should be to fit people for honest work and a good life, and for the inculcation of a religious principle in life.

**"WHY DON'T WE GO AFTER HASA?"** As their meetings concluded, King 'Abd al-'Aziz accepted Crane's offer to bring in engineer Twitchell to work for the Saudi leader at Crane's expense. When he arrived in April 1931, Twitchell's first assignment was to find new and more plentiful sources of drinking water for the pilgrims who arrived in Saudi Arabia for the Hajj each year, mainly through the port of Jiddah. While Twitchell was unsuccessful in that initial venture, he spent much of the rest of 1931 making sweeping improvements to the local water supply in Jiddah, which relied on a system of cisterns installed by the Ottomans some 60 years earlier. Twitchell also surveyed western Arabia for mineral resources and was encouraged by his discoveries there.

In his book *Saudi Arabia*, which covered the years he spent in the country, Twitchell related in the understated tone of the professional engineer the encounter that set him off on one of his most historic journeys: "On the completion of this work in December the Finance Minister said that King Abdul Aziz would greatly appreciate it if I would go across Arabia to advise him on the water resources and oil possibilities in his province of Hasa. . . . Although this would be a thousand-mile trip over rough country, where no American had ever been, the invitation was readily accepted."

Twitchell set out with a convoy of Ford trucks and cars carrying roughly 30 support personnel and their gear, as well as a military escort. His first destination was King 'Abd al-'Aziz's camp north of Riyadh. He then continued his journey eastward, following the path at times of *wadis* (riverbeds that are dry except after heavy rain) and navigating the Dahna sands, a treacherous stretch of shifting dunes at times up to 75 kilometers wide connecting Arabia's northern and southern deserts. He arrived at Hofuf, chief town of the greater al-Hasa region, and then explored up and down the Gulf coast. His journey included a stopover in Bahrain, where Socal's Bapco subsidiary was already drilling for oil, before meeting King 'Abd al-'Aziz again in Hofuf in mid-January.

Engineer Karl Twitchell journeyed 1,600 kilometers from the Red Sea to the Arabian Gulf in December 1931 at the behest of King 'Abd al-'Aziz, who asked him to prospect for water as well as oil and mineral resources in the al-Hasa region. Twitchell was the first American to traverse the Arabian Peninsula.



## Charles R. Crane

An eccentric American millionaire with a passion for philanthropic endeavors in the Middle East and Asia, Charles R. Crane was already in his early 70s by the time he met King 'Abd al-'Aziz in Jiddah in early 1931. He was experienced at finding his way through the region, having visited Cairo for the first time as a 20-year-old in 1878 and having lived for a year in Bukhara and Samarkand (in modern-day Uzbekistan) as a young man in 1891.

Among his many philanthropic activities, Charles Crane, seated at the table in the light-colored suit, in 1919 served as co-chairman of a commission appointed by U.S. President Woodrow Wilson to help determine the political future of subjects of the former Ottoman Empire.



Crane retired from business in 1914 as president of the plumbing supply business founded by his father, reportedly receiving \$15 million for his stake in the Crane Company. After chairing U.S. President Woodrow Wilson's finance committee during the presidential campaign of 1912, he led Wilson's special commission to Russia in 1917 and co-chaired Wilson's commission in 1919 to help determine the political future of the residents of what had been the Ottoman Empire.

Crane and co-chairman Henry C. King, president of Oberlin College, recommended self-determination for Ottoman subjects and an evenhanded approach to Arab and Jewish interests in Palestine. Their position was ignored by most members of the Versailles Peace Conference in 1919. Speaking of the Arab populations in the region, Crane and King concluded that "dangers may readily arise from unwise and unfaithful dealings with this people, but there is great hope of peace and progress if they be handled frankly and loyally."

In 1930, Crane was appointed U.S. minister to China and served in that country for two years. His government service instilled a passion for conserving various aspects of Chinese culture as well as a loathing of the Soviet communists. His anger at the Soviets' destruction of mosques and Muslim schools across the southern Soviet republics during the 1920s was shared by King 'Abd al-'Aziz.

Despite his personal wealth, Crane did not live a luxurious life or expect others to take on work or risks he would not shoulder himself. Acquaintances noted that Crane spent little on himself, while always being quick to pull out his checkbook for a worthy cause.

Among his altruistic efforts, Crane was a trustee of both the Robert College in Istanbul, Turkey, and the Constantinople College for Girls. He also paid to have mosaics restored on the soaring interior of the Hagia Sophia. In addition, he financed the construction of several schools and hospitals in the Middle East, as well as agricultural, water and road-building projects across the region.

The effects of the Great Depression and advancing age limited the scope of Crane's philanthropy as the 1930s wore on. As a matter of principle, Crane had refused to participate in any company that might be formed to develop Saudi Arabia's resources, even before the search for oil began there, lest anyone think he had ulterior motives in visiting King 'Abd al-'Aziz. In 1939, Crane, age 80, died at his desert home in Palm Springs, California, among the thriving groves of date palms he had imported from the Middle East.

Twitchell delivered his positive outlook for oil in the sedimentary rock formations underlying the al-Hasa region. He also supported the construction of a port at Ras Tanura. King 'Abd al-'Aziz wanted to start the prospecting of this potentially rich resource immediately, but Twitchell advised him to wait. Twitchell recalled the meeting in *Saudi Arabia*:

I recommended strongly that the results of the Number 1 Well at Bahrain be awaited before doing anything regarding oil. Since no evidence of faulting or difference geologically between Bahrain and the mainland of Hasa could be seen ... and if the Bahrain well did not strike commercial oil it would be unlikely that it would be found in Hasa, a definite wait-and-see policy was advocated. On the other hand, if the Bahrain well proved a success, it was logical that commercial oil would be found in Hasa, but in greater quantities, because of its much greater area. Furthermore, it seemed quite possible that American capital might be found to undertake the great expense of oil development in Hasa under conditions that would greatly benefit Saudi Arabia.

King 'Abd al-'Aziz took Twitchell's advice, and the Saudi leader's patience was rewarded when Socal's Bapco subsidiary struck oil on Bahrain in May 1932 at a depth of about 670 meters. The oil was found in older, deeper Cretaceous rock, compared with the younger Asmari limestone from the Miocene period in which oil had been found in Persia and Iraq.

With oil discovered in commercial quantities in tiny Bahrain, executives in oil company boardrooms and Middle Eastern *majlises* (traditional open meeting rooms) suddenly shifted their attention some 40 kilometers to the west, to the largely uncharted expanses of eastern Arabia.

Although Socal Vice President Lombardi had been advocating a full-speed-ahead approach to prospecting in the Middle East, he could not help feeling a bit apprehensive by 1932. The economy was worsening by the month, and crude oil storage tanks were filled to the brim across California and Texas. Senior Geologist H. J. Hawley recalled anxious conversations with Lombardi and fellow Socal Director W. H. Berg, who later succeeded K. R. Kingsbury as president. During one of those tense discussions, Berg exclaimed, "My God, if we did get oil who is going to put up the money [to develop it] and who is going to sell the oil?"

Workers employ an Empire drill in the dry riverbed of Wadi Muhrim near Tayif in 1931. Finding reliable sources of water for drinking and irrigation was a top priority for King 'Abd al-'Aziz as he developed his nascent nation.



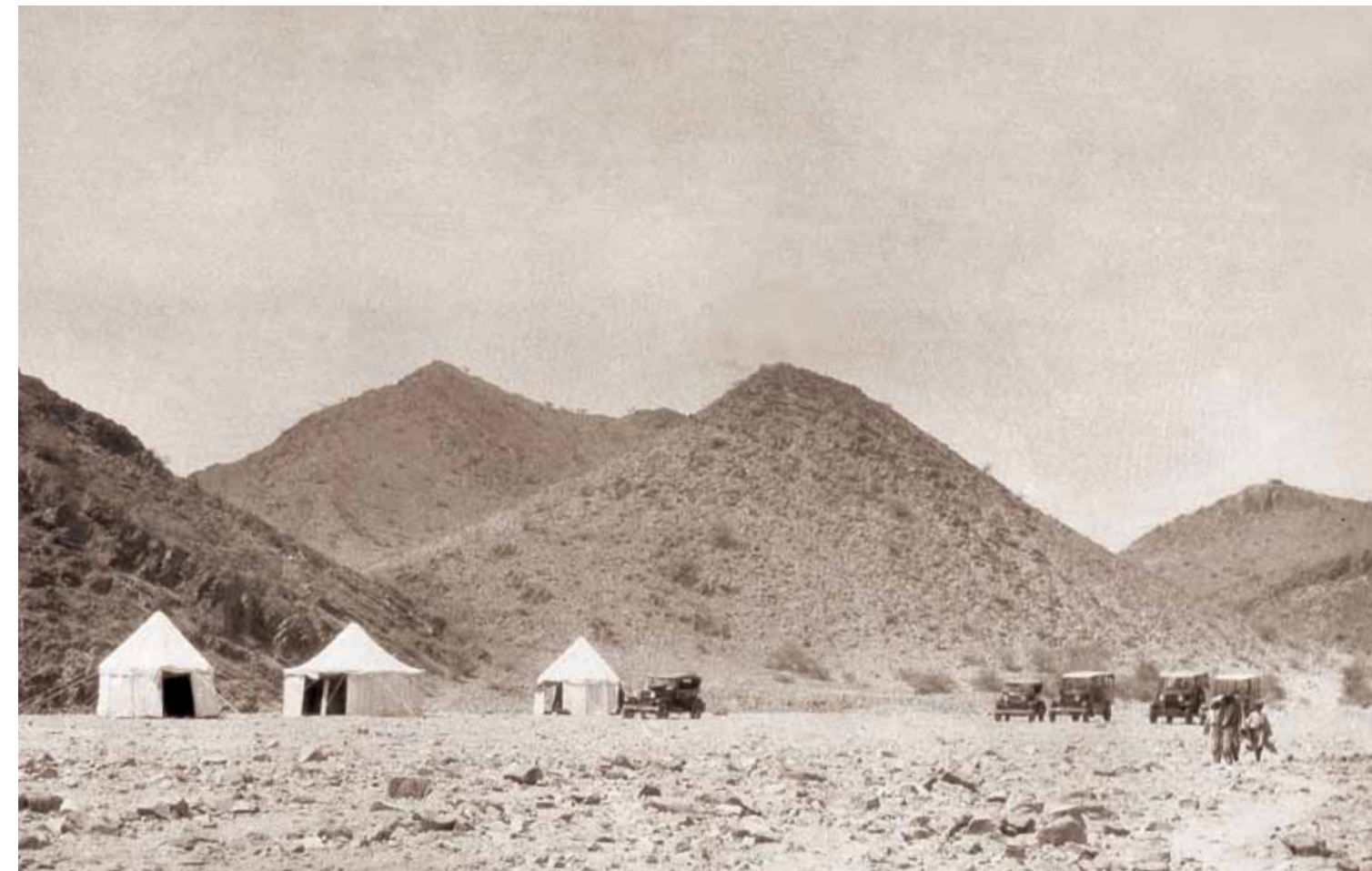
A camel caravan carries drilling equipment across the Hijaz, the western region of Saudi Arabia, in October 1931. Crane donated the equipment to help King 'Abd al-'Aziz develop the nation's water resources.

Hawley further recalled that by midsummer, Socal had dispatched one of its top land-lease lawyers, Lloyd Hamilton, to the London headquarters of Eastern and General to “find out how Socal could enter Saudi Arabia to explore—a concession not desired at that time.” When Lombardi caught up with Hamilton a few months later in London, the dapper attorney had clearly grown more enthusiastic about the prospects in Saudi Arabia. “Bahrain Island looks O.K.,” Hamilton counseled Lombardi, “but it is very small. Why don’t we go after Hasa?”

**COURTING THE KING** As Socal’s geologists and production staff readied themselves for the tasks ahead, something of an international courting match began. A few possible suitors had their eyes on King ‘Abd al-‘Aziz, and he knew it. Experienced in these sorts of rituals—he had been deeply disappointed once already—he prudently and patiently sat back. On November 16, Francis B. Loomis, a Socal foreign affairs adviser and former Undersecretary of State in U.S. President Theodore Roosevelt’s administration, met with Wallace Murray, the State Department’s chief of Near Eastern Affairs. Murray confirmed to Loomis that the British did not have control of the al-Hasa region and that King ‘Abd al-‘Aziz was indeed free to grant a concession to prospect for oil in the region.

During this meeting, Loomis told Murray that Holmes, who had helped Socal get the concession in Bahrain, had offered to provide a similar service in Saudi Arabia. Murray’s notes of the meeting seemed to suggest a deeper level of complexity when he observed: “It appears, however, that the Company does not repose complete confidence in Major Holmes and does not believe that Major Holmes has the influence with Ibn Saud which he pretends to have. Mr. Loomis stating on one occasion when Holmes had gone to the Najd to see Ibn Saud about this matter Ibn Saud refused to receive him. Mr. Loomis thought this resulted from the fact that Holmes had earlier negotiated with Ibn Saud on behalf of the Eastern General Syndicate and that the promises then given were not fulfilled.”

This stone cairn, built at the end of the first field exploration season in May 1934, marks the proposed location of the first oil well on what came to be known as the Dammam Dome. The modest hills (*jabals*, in Arabic) in the photograph stand at the heart of present-day Dhahran and are the top of a classic uplifted dome—and therefore a beacon to the first geologists in search of an oil prospect.



Saying that Socal did “not repose complete confidence in Major Holmes” was a dramatic understatement, even for a career diplomat. Lombardi had been corresponding with Holmes for two years, anxiously seeking news on progress he was supposed to be making in getting an audience with King ‘Abd al-‘Aziz. Davies, in the spring of 1930, had remained in Bahrain longer than he might have otherwise precisely because the company thought Holmes would be able to arrange a quick meeting with the Saudi leader.

The elusive Holmes went months without responding to the Socal officials, then came up with a convenient excuse. In April 1932, he told E. A. “Ed” Skinner, who ran the drilling operations in Bahrain, that he expected to see King ‘Abd al-‘Aziz later that month. In June, Holmes claimed that a death in the Saudi ruler’s family prevented him from making contact at that time with the grieving monarch.

At some point in 1932, Socal officials realized that Eastern and General’s failure to make payments on its earlier concession with King ‘Abd al-‘Aziz was a major factor in Holmes’s inability to make their case for a concession. Loomis, in London frequently during the year, gave Eastern and General until November 1 to produce results. If it failed to perform, Socal would feel free to use other means to pursue a concession.

Reflecting his skepticism about Holmes, Loomis turned the conversation with Murray toward the latest contenders for the position: Twitchell, who, once oil had been discovered in Bahrain, had been authorized by King ‘Abd al-‘Aziz to seek American capital to develop Saudi Arabia’s oil and mineral resources; and Philby, the British desert explorer with business interests in Arabia. Murray favored Twitchell. He knew that Twitchell had already met with several State Department officials and made a favorable impression. He also thought it would be a good idea to have an American representing an American company. It might not have been the message Loomis wanted to hear.

In April 1931, Karl Twitchell set off to prospect for water in the Hijaz, and his first camp, shown here, was located at Bi’r Shubat, al-Baha, along the road pilgrims travel for the Hajj. The prospecting mission was unsuccessful, and Twitchell soon returned to nearby Jiddah to improve its water system.



Hajj pilgrims board buses in Jiddah near the Madinah Gate for the 65-kilometer ride to Makkah on April 1, 1933. At the depth of the Great Depression in 1933, fewer than 20,000 Muslims made the pilgrimage to the holy places in Saudi Arabia—a fraction of the number who went on the Hajj in the prosperous years of the 1920s.





The small island nation of Bahrain, shown here in 1924, was the central point of entry for Socal's efforts in neighboring Saudi Arabia.

Loomis countered by stressing that “he knew Philby very well and was impressed by him.” Hawley recalled, “Loomis had met St. John Philby several times in London during 1932 and wanted to use him instead of Twitchell. This was debated a long time.” Loomis arranged a London meeting with Philby in June of that year. Over lunch, the two discussed the potential for finding oil in al-Hasa, but Loomis did not commit Socal to any specific course of action. Philby was initially taken aback by Loomis's intense interest in the prospects for oil in al-Hasa. He thought the former diplomat had wanted to meet him in London that summer due to his celebrity status—he had just recently returned from trekking across the Rub' al-Khali, only the second Westerner to do so.

In November 1932, after Eastern and General failed to arrange a meeting with the King for Socal, Loomis sent a telegram to Philby in London. He asked the explorer to request permission from King 'Abd al-'Aziz for the company to conduct a geological survey of al-Hasa before entering into negotiations about a concession. Upon his arrival in Jiddah that December, Philby found two additional telegrams from Loomis awaiting him, each increasingly urgent, pressing him to make Socal's interest known to the King.

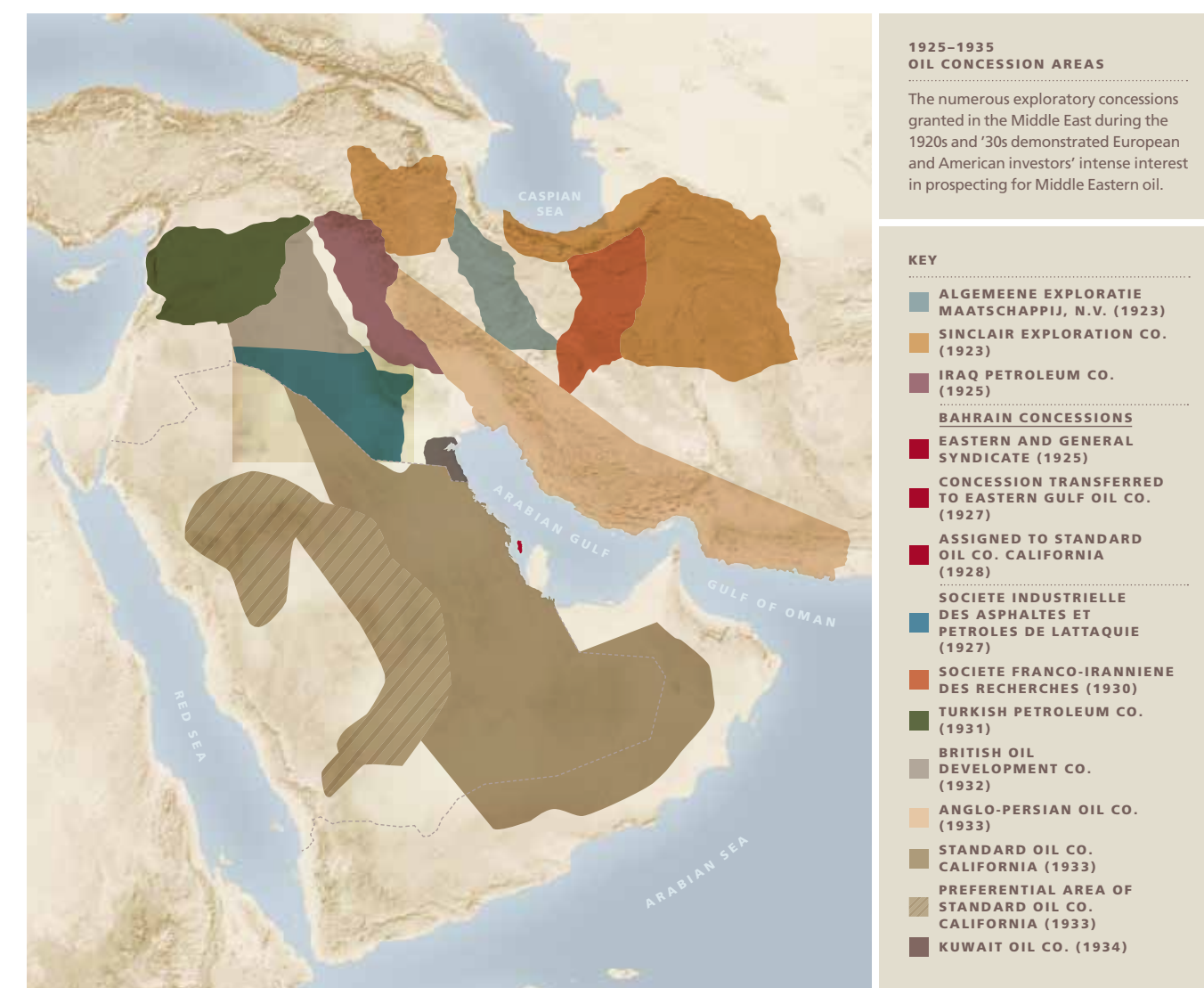
**THE KINGDOM OF SAUDI ARABIA** This jostling mattered little to King 'Abd al-'Aziz, who adopted the title King of the Kingdom of Saudi Arabia as of September 19, 1932, when he decided—in response to petitions by his people—to change the name from the Kingdom of Hijaz and Najd and Its Dependencies to the Kingdom of Saudi Arabia and chose the first day of the astrological sign Libra—a symbol of justice and equality—as the Kingdom's National Day. Given his earlier experience, King 'Abd al-'Aziz was in no mood to consider conditions set by outsiders. He would set his own. So after conferring with King 'Abd al-'Aziz and his advisers in Makkah, Philby reported to Loomis that given Saudi Arabia's strained finances, the King had decided that no surveying would be allowed until after payment had been received for a concession. The King's terms, which Loomis characterized as “quite burdensome,” included a demand for an up-front loan of £100,000. Loomis, replying with understated diplomacy, noted that Socal's “information concerning His Majesty's terrain is very meagre.” The parties were half a world apart in more ways than simple geography. The deal as yet had no shape or direction, but the negotiations had begun.

Lombardi continued to push for a resolution on the question of who would represent Socal in Saudi Arabia. He was worried Socal's luck might not hold. With Philby unreachable as of late

1932, Socal officials decided to retain Twitchell, based not only on his previous survey of the al-Hasa region but also on a letter from King 'Abd al-'Aziz authorizing him to seek foreign investors. Even while negotiating terms with Twitchell, Socal continued to reach out to Philby, under the presumption that the King would favor them all the more should the company be able to offer Twitchell's expertise alongside Philby's cultural sensitivity. By late December, Loomis had heard from Philby, and the Englishman agreed to discuss how he might assist Socal, leaving details of their relationship temporarily up in the air.

In coming to terms with Twitchell, Lombardi took a measure of the man who would help make Socal's case in Saudi Arabia. Twitchell had driven a hard bargain: Socal would pay him \$1,000 a month plus expenses as long as he was working for the company, and \$15,000 if the company landed a concession, payable within 30 days of drilling the first test well. In the meantime, Twitchell would be free to continue his efforts to secure a mining concession in western Saudi Arabia for other parties. In addition, if oil was found in commercial quantities, Socal would pay him 50 cents per ton, or about 7 cents a barrel, up to \$50,000. With the unemployment rate in America approaching 25 percent at the time the contract was signed in January 1933, those were very favorable terms indeed.

While pushing forward on Saudi Arabia, Lombardi found himself fighting a rearguard action on Socal's Bahrain concession. As late as November 1932, IPC was still trying to dissuade Socal from going forward on its own in Bahrain. Sir John Cadman, chairman of Anglo-Persian Oil and the driving force behind IPC, met with Lombardi in San Francisco to express his concerns.





Socal's board of directors met at the company's headquarters at 225 Bush Street, San Francisco, and was responsible for all major company decisions, including the choice to pursue oil concessions in Bahrain and Saudi Arabia.

Cadman was already the focus of British discontent over the fact that the American company had managed to get a toehold in the Middle East with its Bahrain concession. Cadman was later criticized in the London press and the House of Commons as the man who let the Americans get into what had been the preserve of the British Empire.

Cadman told Lombardi that if Socal ramped up production in Bahrain, he "feared the Shah of Persia and King of Iraq would thereafter demand more production in those areas." Cadman was also worried that a new producer in the area using the latest technology would drive up IPC's production costs. A few years later, when Socal introduced air conditioning in its camps, thereby forcing IPC to follow suit, Cadman complained that it cost IPC "millions of pounds."

Cadman also floated the idea that Socal might consider joining IPC, from which it had been excluded years earlier, and reap the benefits of acting in concert in the Middle East rather than engage in cutthroat competition. In trying to get Socal to join IPC, Lombardi recalled, Cadman "stressed the marketing side, meaning the difficulty of selling Bahrain oil." Socal shared this concern, and a few years hence it was a major factor in the company's decision to bring in The Texas Company, which later would become Texaco, as a partner in its Middle Eastern venture. However, as of late 1932, Socal resisted the advances from Cadman, who still did not appear to be aware of Socal's intentions in Saudi Arabia. He found out soon enough.



Bapco, Socal's subsidiary in Bahrain, struck oil in May 1932, and the company's small refinery was soon supplying gasoline to filling stations such as this one near Jabal Dukhan, the site of the discovery well.

**GETTING TO THE TABLE** In mid-January 1933, Lombardi and Twitchell sailed for London to map out negotiation strategies with Hamilton. After the conferences concluded, Twitchell and Hamilton, accompanied by their wives, Nona and Airy, left London for France. In Marseilles, they boarded a steamer, the *Burmah*, on which they sailed to Jiddah, where Socal representatives were to hold concession talks with Saudi government representatives beginning February 15, 1933.

Lombardi recalled later that he met with Holmes and E. W. Janson, whose father-in-law, Edmond Davis, held the controlling interest in Eastern and General. Even though Socal considered itself free of any contractual obligation to Eastern and General as a result of the latter's nonperformance concerning King 'Abd al-'Aziz, both parties had an interest in keeping abreast of events in the Middle East. Holmes also acted as the first British representative of Bapco in Bahrain, meeting a requirement by the British government that the position be filled by a British subject.

At the direction of Kingsbury, Lombardi left London for Bahrain to review progress being made on the Socal concession. Governments and private entities were jockeying to see who

could secure the next prospecting agreement in the area. An unpublished account of the trip, based on interviews with Lombardi in the early 1950s, underscored the extent to which Socal was starting to view the Arabian side of the Gulf for its oil-production possibilities.

In flying to and from Bahrain, Lombardi took occasion to look over the topography of the Persian Gulf coast of Saudi Arabia, as well as Bahrain. What he saw there convinced him that Hamilton had exhibited good judgment in recommending they go after a concession in the province of Hasa.

He says he could see the Dammam structure [the name that would be given to the *jabals* and surrounding area viewed by Davies in 1930], and with the aid of field glasses examined it and its relationship to the outcroppings on the island. As Lombardi says, any shepherd could as well have noted the similarity between the structure on Bahrain and that at Dammam.

The peninsula of Qatar could also be seen from the high point of Bahrain Island, and it was evident that the axis of the [Qatar] peninsula was parallel to the axes of the dome of Bahrain Island and that of the Dammam structure. It seemed that Qatar offered excellent possibilities for oil, but we [Socal] were never to get it, owing to the control exercised over the peninsula by the Iraq [Petroleum] Company and the British government. ...

**A BLURRING OF ROLES** With Hamilton and Twitchell en route to Jiddah, Loomis and other Socal officials thought they had Philby firmly in their camp as they prepared to negotiate for the al-Hasa concession. After all, he had acted as their go-between with the King via telegram in late 1932 and passed along the importance that King 'Abd al-'Aziz receive a sizeable up-front payment. Philby had other ideas.

As Philby later noted, at this point the Americans had not paid him anything for his help, after telling him in late January 1933 that they had retained Twitchell to advance their cause with the Saudi government before he had answered Loomis's telegram in late December: "It will be noted that while Twitchell had been 'engaged' in work for the company, not the slightest hint had yet been given that the company even contemplated the making of comparable arrangements with me."

Philby presented himself as a free agent who, in fact, had the interests of the King and his government in mind at all times. "I regarded myself primarily responsible, also in a purely honorary capacity, for getting the best possible terms for the Government; the Finance Minister had impressed on me his expectation that I would work on those lines."

Philby increasingly viewed King 'Abd al-'Aziz as the model for a new generation of Middle Eastern leaders who wanted to steer clear of imperial domination by Britain or any other international power. His conversion to Islam in 1930 only strengthened his identification and sympathy with the administration of King 'Abd al-'Aziz. Members of the monarch's court, however, tended to question the convert's sincerity and his later claims to have had the King's ear at nearly all times during the concession negotiations in early 1933.

One of Hamilton's first acts after arriving in Jiddah in February 1933 was to secure Philby's services on behalf of Socal. The agreement, which was kept secret during the negotiations and for years afterward, provided for payment to Philby of \$1,000 a month, backdated to January 1933 and continuing through June 1933. Philby would also receive \$10,000 if Socal won the concession and an additional \$25,000 if oil were to be found in commercial quantities in the concession area, at the rate of 50 cents per ton of extracted oil, to be paid in full within a year of the start of commercial production. For Philby, who had been surviving for more than a decade on income generated mostly from his travel writings and the sporadic salary paid by his financially strapped trading company, the Socal engagement was a financial lifesaver. The company later also agreed to pay Philby an annual retainer of £1,000 from July 1933 through March 1941.

The Hamiltons settled into Jiddah's Grand Hotel as well as the social routine among the expatriate community (see "Grand Hotel," p. 51). Other than hotel staff, they had little if any contact with Jiddah residents or other Saudis beyond the government negotiators with whom



Among the most intrepid of Western explorers in Arabia, Harry St. John Bridger ('Abd Allah) Philby, shown here in 1932, was also a close acquaintance of King 'Abd al-'Aziz. In the 1930s, he encouraged the King to seek foreign capital and expertise to develop the Kingdom's oil resources for the benefit of his people.

Britain's Steven Longrigg, left, and Socal's Karl Twitchell, far right, were on opposite sides of the concession negotiations, but as part of a small expatriate community, still found time to socialize outside Jiddah in March 1933.



Major Frank Holmes, shown here in London in 1936 with *Shaykh Ahmad bin Jaber* of Kuwait, assisted Kuwait in finding backers for oil exploration. A consortium that included Gulf Oil and Anglo-Persian Oil Company struck oil in Kuwait in February 1938.

they met. Hamilton, who had made a very successful career out of being able to negotiate with all sorts of people, clearly couldn't stomach the self-important British minister Sir Andrew Ryan. As he confided to Lombardi, "While I am tempted at times to kick the British minister downstairs, I feel more or less obliged to attend most of the Sunday evening open-houses, since my remaining away would be open to misconstruction." Philby would later refer to Ryan as the "Last of the Dragomans," who was "bred in the school of traditional western dominance in the eastern world. . . ."

Hamilton and his wife met two representatives of the IPC at Ryan's regular open house at the British legation on March 14, 1933. The first, Stephen Longrigg, was based at the time in the eastern Mediterranean port city of Haifa, overseeing work on an IPC pipeline. Hamilton initially viewed Longrigg with the same disdain he expressed for Ryan. Longrigg, sporting a monocle, strode across the room toward Hamilton. As Hamilton related to Lombardi, "Longrigg greeted me with the statement that he didn't know whether I would shake hands with 'the enemy.'"

Despite the opening bluster, Longrigg was fairly open in his dealings with Hamilton and Philby. Longrigg announced at the open house that, with pressing pipeline business in Haifa, he had not wanted to come to Jiddah in the first place, and he sincerely hoped to be on the boat back to Haifa in two weeks. Neither he nor Ryan, nor the British government, apparently, was convinced that the Bahrain oil find was a strong indication of oil in al-Hasa.

A few days after arriving in Jiddah, Hamilton initially met separately with groups of Saudi government officials, most often led by Finance Minister 'Abd Allah Al-Sulayman, one of the King's closest confidants. A few days later, IPC's Longrigg joined the talks, which were held in a dimly lit room on the second floor of Khuzam Palace. In addition to Al-Sulayman, the other key Saudi negotiators were Deputy Foreign Minister Fuad Hamzah and the King's confidential secretary, Yusuf Yasin. Constantly at their side was their interpreter, Najib Salhah.

The Saudis continued to insist on a sizeable up-front loan of £100,000 before any concession would be agreed to. Significant annual rental payments were to follow, as well as a portion of future oil revenues, if any. After several arduous meetings, Hamilton reached what he thought was a more reasonable agreement and secured approval from Socal officials in San Francisco to move forward, only to return to the negotiating table to discover a new list of Saudi demands, and thus the process began anew. Throughout, the Saudi team made it clear they were happy to have the British in Jiddah negotiating for the same concession.

## Grand Hotel

Once in Jiddah, the Americans were situated at the newly renovated Grand Hotel, a three-story pioneer of the Arabian lodging industry. It had been refurbished with an eye toward the upscale pilgrim en route to Makkah, though in early 1933 there were few pilgrims of any income level, not to mention wealthy sojourners. The hotel featured large rooms, including bedrooms with brass beds, spacious dining rooms and living rooms with each of its top-floor suites. Servants seemed to be at the Americans' elbows as if by magic. The hotel did, however, lack running water and air conditioning. Nonetheless, the breezes were pleasant in the early months of the year, especially in the evening when the Americans' conversation would trail off as they listened to the call to prayer from nearby mosques.



Jiddah in the 1930s had a population of roughly 30,000, which was still entirely contained within the old city walls. The Grand Hotel was modeled on the finer houses in Jiddah. Often reaching four or five stories in height, these houses, belonging to the leading merchant families, were built with thick walls of coral stone and plaster to help keep out the heat. Intricately carved wooden *mashrabiyyah* privacy screens and balconies leaned out over the narrow streets and alleys separating the buildings. Large, high-ceilinged rooms typically opened off of a wide central staircase, which served double duty as a ventilation shaft. One of the most prominent of these houses was the home of *Shaykh* Muhammad Nasif, where King 'Abd al-'Aziz often stayed as a guest. The stairway was wide enough, it was said, that the King, occasionally plagued by war wounds in his legs, could ride a camel up the stairs. On the roof of such a home was an open-air *majlis*, where the men gathered to catch the cool sea breezes after sunset. By comparison, the King's rather modest palace outside the city walls, Khuzam, was only two stories high, though its interior meeting rooms were built on a grand scale.

While in Saudi Arabia to negotiate an oil concession during the spring of 1933, representatives from Socal often spent their evenings with their wives enjoying the breeze atop Jiddah's Grand Hotel.

Hamilton soon realized that Philby was not working solely to advance the interests of Socal. Hamilton was clearly annoyed, but not to the extent that he did not want to keep the British explorer close to him so he would know what he was up to. As Hamilton wrote to an associate later that spring:

Philby—if I may give you my opinion confidentially—is a curious individual; something between an idealist and a business-man, with some of the better elements of both missing. I am, however, primarily concerned about his business side ... instead of espousing our cause 100%, he has been working to some extent in the interests of the [Saudi] Government in order—as he expresses it—to see that the Government gets a fair deal. I didn't fully realize this for some time, and when I did I ceased telling him the full extent of any authority received, because I felt reasonably certain that such information would be conveyed to the Government, and thereupon the Government would expect to beat me down further.

IPC technically remained engaged as the concession talks wore on in April 1933 and the heat and humidity of a Red Sea summer returned with a vengeance. The King's advisers made it clear to both parties that the government needed money, and a lot of it, to take any bid seriously. IPC, which had been resisting the Saudi government on this score more vehemently than Socal, was given one more opportunity to make its last, best offer during the latter part of April, but for all

### 'Abd Allah Al-Sulayman

'Abd Allah Al-Sulayman Al-Hamdani was rightly considered one of the King's most trusted advisers and to a very large extent second in authority only to the King in the early decades of his rule. Al-Sulayman was born in 'Unayzah in the Qasim region north of Riyadh. His father moved the family to India when Al-Sulayman was a boy. There in Bombay, Al-Sulayman learned bookkeeping before returning to Arabia. His extraordinary abilities were quickly recognized by court officials. During King 'Abd al-'Aziz's mid-1920s campaign to take the Hijaz, Al-Sulayman succeeded his older brother Muhammad as personal secretary to the Saudi leader. By the late 1920s, he was acting as senior adviser in charge of finance and most other domestic issues. Al-Sulayman did not formally receive the title Minister of Finance until the Kingdom of Saudi Arabia was formed by Royal Decree on September 23, 1932.

Al-Sulayman shared the King's concerns about the country's financial stability and was adept at discreetly tapping wealthy merchants in the Hijaz or al-Hasa regions for loans when the government's coffers were running low. During the Great Depression, he was acknowledged for shrewdly stretching out government payments and effectively husbanding the government's scarce resources. Harry St. John Bridger Philby, the British explorer who also owned a trading company based in Jiddah, grudgingly admired Al-Sulayman's fiscal austerity. Philby recalled that during the worst of the Depression years Al-Sulayman managed to "get a quart out of a pint bottle."

Al-Sulayman brought his best negotiating skills to the table in the spring of 1933 as the Saudi government bargained with Standard Oil Company of California's Lloyd Hamilton and Iraq Petroleum Company's Stephen Longrigg for the rights to a concession to explore for oil in the Kingdom. It is impossible to speculate as to whether he thought his original demand of an immediate loan of £100,000 was reasonable, but the final agreement to a loan of £50,000 payable in two installments was far superior to Hamilton's initial offer of a £20,000 loan up front. Al-Sulayman also succeeded in ensuring that the concession agreement ultimately signed with Socal included a provision that gave Saudi Arabia a portion of all future oil revenues, which helped provide for the development of the young country.



Finance Minister 'Abd Allah Al-Sulayman, photographed here in 1937, was the most influential adviser to King 'Abd al-'Aziz. He played a leading role in negotiating the 1933 concession agreement as well as in piloting Saudi development programs for the next 20 years.



LEFT Yusuf Yasin, King 'Abd al-'Aziz's confidential secretary, seen here in 1931, was one of the key Saudi government representatives in the concession negotiations.

BELOW Finance Minister Al-Sulayman, shown at right, pursued several avenues to spur development in the Kingdom in the early 1930s. Next to him in this May 1932 photo is I. J. S. Van Leeuwen, a Dutch financial adviser. The Netherlands Bank in Jiddah had a well-established history of financing Arabian import-export trade, and Socal officials used it to help gauge soaring gold prices as they finalized the concession agreement in the spring of 1933.



practical terms the only serious contender for the concession now was Socal. As Longrigg later related in his written account of the negotiations, “The IPC directors were slow and cautious in their offers and would speak only in [silver] Rupees when gold was demanded. Their negotiator, so handicapped, could do little.”

As of the latter part of April, the Saudi negotiators had reduced their initial demands for a loan of £100,000 in gold to £50,000. (At the time, the amount was the equivalent of roughly \$250,000.) Hamilton had agreed to make the loan interest-free, so as not to run afoul of prohibitions against paying interest under *Shari’ah*, or Islamic, law. Although he had approval from the Socal board of directors to make an up-front loan of up to £35,000 in gold, Hamilton told the Saudi negotiators and Philby, whom he knew by this point was confiding in the Saudis, that his upper limit was £30,000, with £20,000 to follow in 18 months. The sides were getting closer. Once the loan amount was agreed upon, other issues began to fall away one after another—an annual rental fee of £5,000, getting geological work under way in al-Hasa within three months of ratifying the contract, drilling to start no more than three years later, a royalty paid by Socal to the Kingdom of four shillings gold (or about \$1) per ton of oil and a 60-year term for the concession.

**GLOBAL INSTABILITY** As the agreement began to take its final form, world events once again threatened to dismantle the entire effort. The Americans in Jiddah learned in early March 1933 that the new U.S. President, Franklin Delano Roosevelt, had suspended most banking activity in

Life in Saudi Arabia remained relatively unchanged for hundreds of years, as shown in this 1940s street scene in Qatif. The concession agreement between the Saudi government and Socal ushered in a new era of rapid change.



the United States—an action that came to be known as a bank “holiday.” Roosevelt’s team of New Deal experts was desperately trying to right the American economic ship, which had nearly gone under in the final weeks of the Hoover administration. Foreign-exchange transactions were briefly suspended, and once they resumed, the dollar traded lower against most major currencies. It was a drastic step, but it showed signs of working as financial markets gradually responded more positively to clear indications that the government of a major nation was doing something dramatic to pull itself out of the depths of the Great Depression.

Global markets were thrown into a panic again on April 19, 1933, when the Roosevelt administration, responding to a torrent of bank failures in the United States, banned the export of gold. The Netherlands Bank in Jiddah raised the price of the gold pound from \$4.87 to more than \$6 in a matter of days. The Saudis’ demand for payment in gold was quickly becoming more and more expensive. While Hamilton continued to negotiate in Jiddah, not wanting to convey a sense of panic and not certain what the outcome of the ban would be, Lombardi was in London frantically searching for alternative sources of gold coins. He investigated buying gold in the Amsterdam and London markets, as well as the option of importing sovereign coins from India. Each idea looked more expensive than the last.

The negotiating parties finally agreed to alter certain terms of the agreement to reflect the unsettled state of the gold market. The initial payments would still be made in gold, with the understanding that the Saudis would have to repay the loan at a faster rate than previously agreed to. The negotiators also agreed that the second and subsequent payments could be made in foreign currencies at Socal’s discretion.

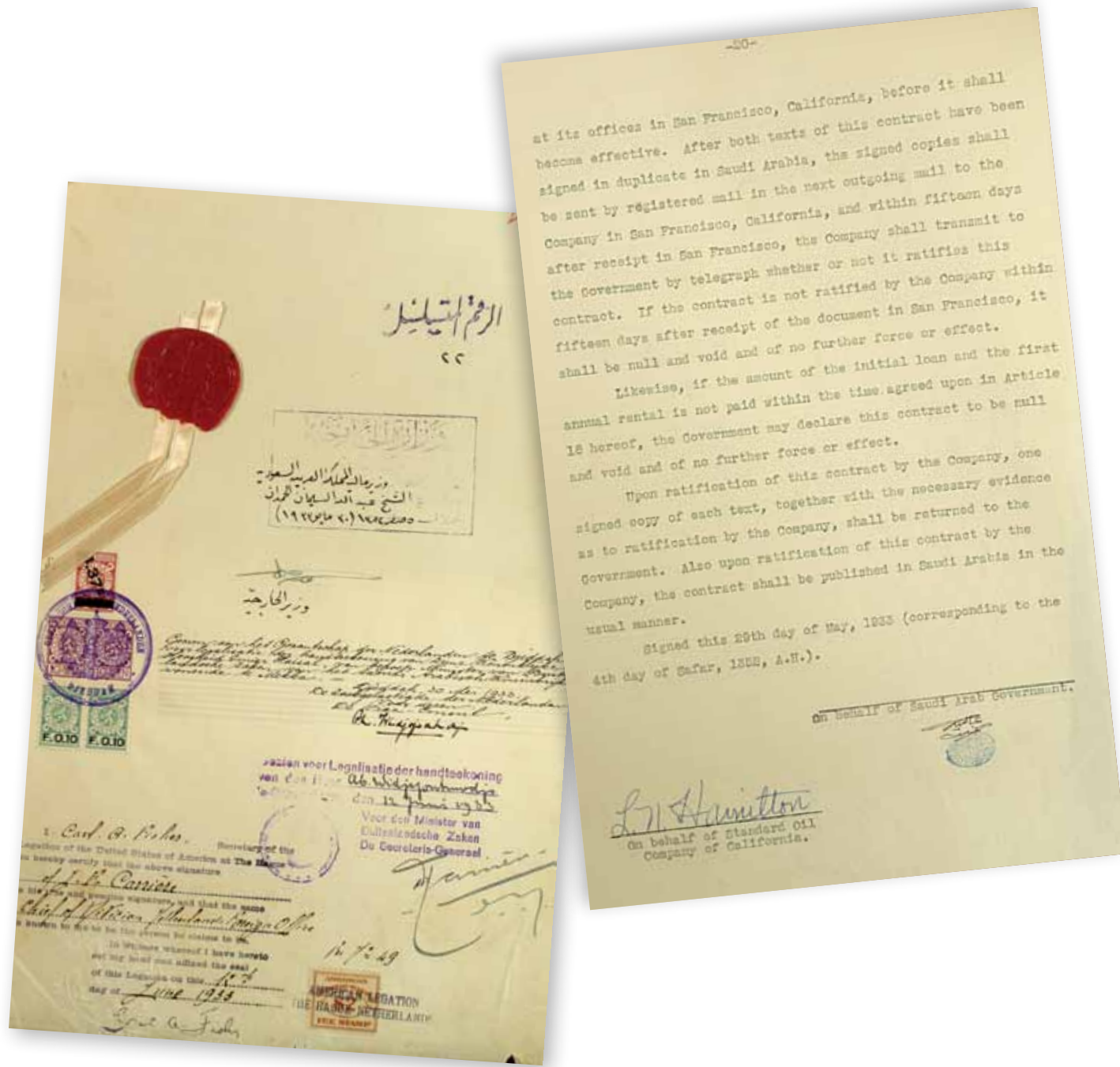
**SO CLOSE, AND YET SO FAR** In April, after IPC’s Longrigg had left Jiddah with the outcome of the negotiations still very much in doubt, Hamilton was contacted by Finance Minister Al-Sulayman and told that the King would be in Jiddah in two days and would be happy to receive him. Telling no one, not even Philby, Hamilton arrived at the agreed-upon time at King ‘Abd al-‘Aziz’s two-story palace. The lawyer passed through ranks of dagger-bearing Bedouin guards and entered a 24-meter-long *majlis*, with the King seated at the far end.

The writer Marquis Childs, apparently having interviewed Hamilton, described the meeting in an article titled “All the King’s Oil” in the August 1945 issue of *Collier’s* magazine, which was reprinted in that December’s issue of *The Arabian Sun*, the newspaper for the employees of Aramco, as the company was named in 1944.

Childs reported that the King spoke favorably of America during his tête-à-tête with Hamilton, having heard from his longtime friend the *Shaykh* of Bahrain how rapidly the Americans had progressed with drilling on that island. The *Shaykh* also reportedly had referred to the Americans as friendly and not exhibiting the condescension commonly shown toward Arabs by other foreigners. The testimonial from Bahrain helped sway King ‘Abd al-‘Aziz, already predisposed favorably toward America, to accept the Socal offer. The King agreed to the advance of £30,000 in gold, allowing his ministers to work out the rest of the details.

Childs added, “The Arabians were frank in saying they favored America. Your Country, Hamilton was told, had no imperial designs. ‘And besides,’ they added in the King’s words, ‘you are so far away.’”

By the first week of May 1933, it was all over save for ironing out some last-minute details. IPC refused to raise its initial offer of £10,000—payable in silver rupees, not gold. Philby, leaving Jiddah on May 18 (even though the concession hadn’t yet been formally adopted) to tend to other business concerning his company, stopped in to say goodbye to Ryan: “It was duly signed next day by Hamilton and the Finance Minister, but that evening when I went to say good-bye to Ryan on our approaching departure for England, I found him still confident regarding Longrigg’s chance of success, supported as he was by all the resources of the British Legation. When I told him what had happened that morning, he was almost speechless with rage and disappointment.”



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.

After hearing the 37 separate articles read out loud at a meeting of his privy council in Makkah, King 'Abd al-Aziz directed Al-Sulayman, "Put your trust in God, and sign." Al-Sulayman and Hamilton signed the contract in Jiddah on May 29, 1933. The sprawling concession area covered 829,000 square kilometers, reaching from the border of Iraq in the north, stretching as far west as the Dahna sands and south to the Rub' al-Khali. The 60-year agreement was proclaimed in *Umm al-Qura*, the official gazette of Saudi Arabia, on July 14. The tightly crafted and simply worded document, which required Socal to start prospecting for oil within three months and start drilling within three years, would function as the basis governing relations between American oil interests and the Saudi government for decades to come.

While the initial loan payment was of crucial importance to the financially strained government at the time, another provision of the agreement loomed much larger in the development of the Kingdom in coming years. Article 23 stated, "The enterprise under this contract shall be directed and supervised by Americans who shall employ Saudi nationals as far as practicable, and in so far as the Company can find suitable Saudi employees it will not employ other nationals." This single article helped set the stage for the vast transformation of Saudi society.



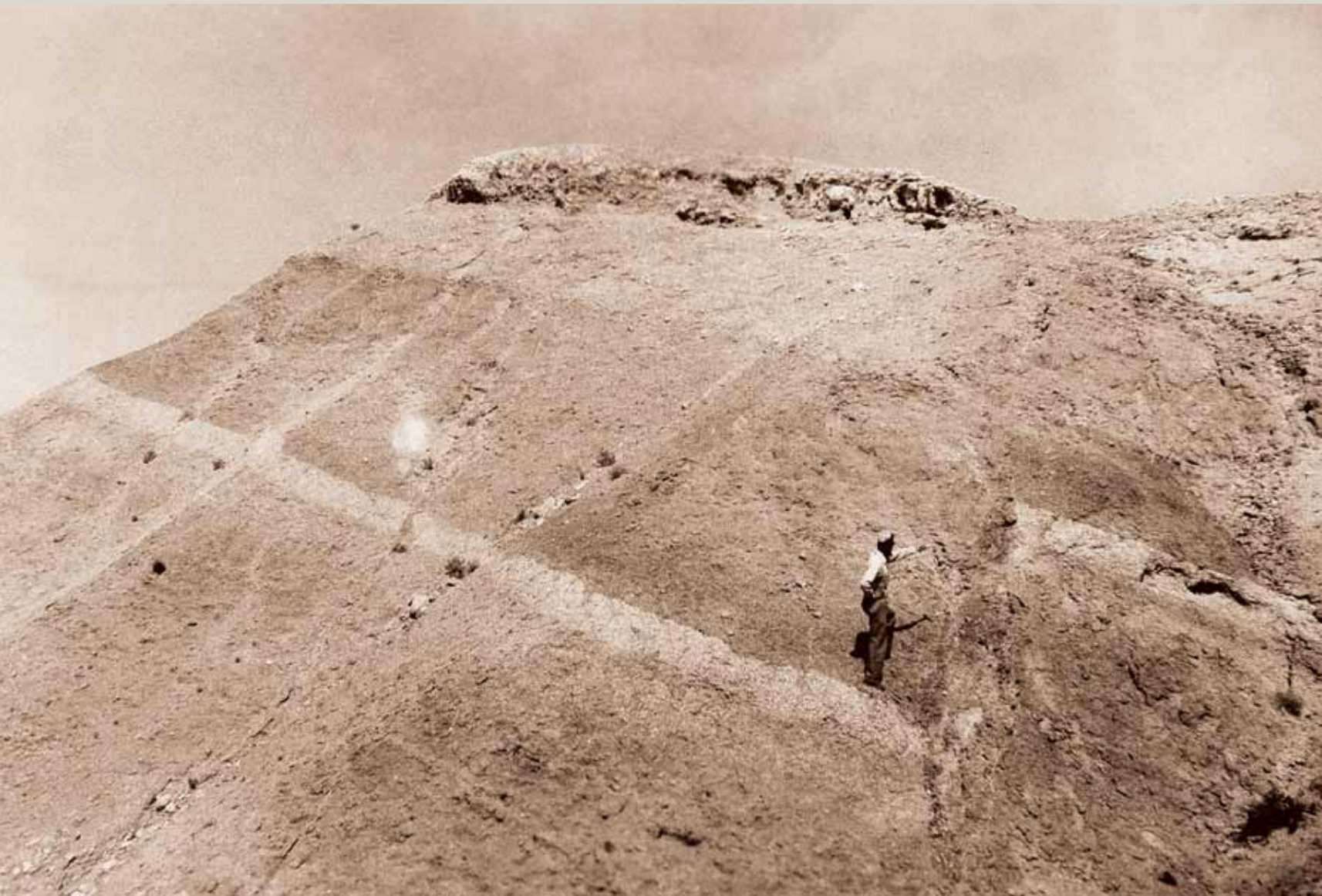
Workers at the Netherlands Bank in Jiddah count Socal's advance payment of gold coins in August 1933. When the United States banned the export of gold in April 1933, Socal scrambled to locate a new source, eventually obtaining 35,000 gold sovereigns from the Royal Mint in Britain.

CHAPTER THREE

# Reading the Rocks



Dhahran, 1936.



A geologist points to a geologic fault in Saudi Arabia in 1939. Such faults may trap oil as it flows through sedimentary formations.

With an agreement to explore for Arabian oil finally in hand, the California oil company executives wasted no time preparing to explore the vast concession. Even before negotiations for the concession began, Socal officials scrambled to put in place the men and materiel necessary to quickly establish a presence in Saudi Arabia.

In 1932, Robert P. “Bert” Miller, a company geologist who would later be in charge of geological fieldwork in the Kingdom, joined Socal’s operation in Bahrain. As an internal history of Socal’s early years in Saudi Arabia noted, “While he had definite assignments in Bahrain, the primary object of sending him at that time had been to make him available in the event an exploration contract should be obtained from the Saudi [Arabian] Government.”

Why the rush? For one thing, the concession agreement stipulated that Socal should begin work in Saudi Arabia by the end of September 1933. Second, fortunes were at stake at a time when Socal was in no position to squander them. Its initial payment of £30,000 to the Saudi government was to be followed by a second payment of £20,000 18 months after the signing of the concession. Socal wanted to find out as much as it could about the concession area in the meantime.

In the worst-case scenario, Socal’s initial exploration could determine there were no promising oil prospects in al-Hasa, and the company might find it fiscally prudent to terminate operations before having to make the second payment. But in the “glass half-full/glass half-empty” world of oil exploration, few decisions are simple. Yes, the company would save £20,000, but it would also be forced to forfeit its continuing exploration and development rights in the concession area.

The first Socal geologists to head in-country—Miller and Schuyler B. “Krug” Henry—took a boat from Bahrain to Saudi Arabia, arriving at the small port town of Jubail the morning of September 23, 1933. With them was Karl Twitchell, the mining engineer who had helped Socal negotiate the concession and whom the company had retained to help outfit the geologists. Using two cars Twitchell had rented in Jiddah and driven in a cross-country caravan to the Gulf, the party found itself stuck in the sand its first day in the country. Miller and Henry were forced instead to ride on camels, watched by bemused residents of the area who had flocked to Jubail to witness their arrival. For an enterprise that would be—even in ideal circumstances—an extraordinary challenge, this was a less than auspicious start.





Three days after first arriving in Jubail in Saudi Arabia on September 23, 1933, American geologists Robert P. "Bert" Miller and Schuyler B. "Krug" Henry transfer from a dhow to donkeys for the final stretch of a trip to Darin, a small community on Tarut Island. From there, they traveled to the nearby date palm oasis of Qatif as part of their efforts to survey possible bases of operations.

The geologists subsequently visited Hofuf and Qatif, a smaller oasis town on the coast south of Jubail. They decided to keep an office in Hofuf, which had been the Saudi government's recommendation, but to base the exploration teams in a roughly 10,000-square-meter compound in Jubail provided by the Al-Gosaibi family, wealthy traders with close ties to King 'Abd al-'Aziz. Jubail was free of the canals that snaked through the al-Hasa oasis, which provided water to the date palm groves while also serving as first-class breeding grounds for malaria-carrying mosquitoes.

On September 28, 1933, Henry and Miller made a cursory examination of the geological dome that Fred Davies had observed from Bahrain in 1930 and marked it for additional study. Henry and J. W. "Soak" Hoover, a fellow geologist, began a detailed survey of the dome immediately after Hoover's arrival on October 22 and named it the Dammam Dome after the small fishing village north of the structure. They also marked mean high tide a few kilometers south of Dammam to use as the base elevation for maps of the region.

The initial progress, first in geological surveying and then in drilling, gave way to delays and was agonizingly slow. The Dammam Dome appeared to be an anomaly. Few other likely prospects were found in the concession area. Despite small amounts of oil initially found on the dome, additional drilling proved frustrating. This sense of frustration was compounded by the evolving relations among the American oilmen, Saudi government and Saudi workers, which enjoyed some progress and endured some setbacks as each group adapted to a different way of life.

Simply getting from point A to point B also proved difficult. Early vehicles, especially heavy trucks with standard-issue tires, often got stuck in the deep sand. When Socal geologists Thomas W. Koch and Art B. Brown and four Saudis arrived from Bahrain on November 10, 1933, to conduct a trial run through the sandy country between al-'Uqayr and Hofuf, the trucks quickly sank in sand up to their axles, and the geologists were forced to leave them in storage at al-'Uqayr. Quickly evaluating their situation, the geologists embraced the millennia-old custom of using camels to carry loads across the desert. The Al-Gosaibis, their landlords, helped them locate camels to rent.

**CASOC IS BORN** While the geologists were working in the desert in early November 1933, Socal directors voted to create a corporate entity that would include all of the company's Saudi Arabian assets. The directors decided that it would be best to separate the operations in Saudi Arabia from those already under way in Bahrain. After mulling over several names for the new unit, Lombardi's choice—conveying the parent company's identity and the new base of operations—prevailed. It was named the California Arabian Standard Oil Company, or Casoc for short. The new company was incorporated in Delaware on November 8, 1933, and Socal promptly assigned its rights under the concession agreement to Casoc. On an operating basis, Casoc continued to function as a division of Socal.

Showing respect for local customs by wearing traditional Saudi attire, Casoc personnel pose in front of their Jubail headquarters in the latter part of 1934. From left to right are Thomas W. Koch, J. W. "Soak" Hoover, Richard C. "Dick" Kerr, Robert P. "Bert" Miller, Hugh L. Burchfiel, Schuyler B. "Krug" Henry, Felix W. Dreyfus, Charles Rocheville, Allen C. White and Art B. Brown. The photo was taken by geologist Max Steineke.



After living in the field for about one month, Henry and Hoover packed up their tent camp at the Dammam Dome and relocated to the newly designated headquarters in Jubail, arriving there on December 7, 1933. Hoover described the Jubail move in a December 10 diary entry that painted a picture of the compound as the lap of luxury compared to tent life: "The home is big enough, covers a city block easily, each bed room [with] its own crude bath room and a balcony on the roof—enormous servants quarters, etc." There, the men were joined by Hugh L. Burchfiel, the sixth geologist to arrive in Saudi Arabia that first season. Meanwhile Allen C. White, an engineer who had surveyed the entire Bahrain concession and had the most detailed knowledge of Arab culture among the group, arrived from Bahrain with an interpreter originally from Peshawar, Ajab Khan, a cook and three pickup trucks.



J. W. "Soak" Hoover, Schuyler B. "Krug" Henry and other members of their field party pose for a photograph outside their walled compound in Jubail in the fall of 1934. Hoover and Henry were on their way to conduct a detailed geological survey of the Dammam Dome.

On December 23, Miller took a boat to Bahrain to meet Dr. Jorgen "Doc" Nomland, chief geologist from Socal headquarters, who had arrived to review the geologists' progress. Miller returned to Jubail on January 2, 1934, with Nomland and Felix W. Dreyfus, a mechanic. Dreyfus's job was to set up shop in Jubail for repair work on the motorized equipment and to train local Saudis as his assistants. Dreyfus was a welcome addition to the crew, which had been making stop-gap repairs to machines and equipment so they would not lose days or weeks while waiting for crucial replacement parts.

Nomland remained with the Casoc team in al-Hasa Province for roughly a month before he continued on to Jiddah to meet with William Lenahan, the company's liaison with the Saudi government, about whether Socal should compete with IPC for another concession in western Arabia.



Until the first pier was completed at al-Khobar in the spring of 1935, many of Casoc's supplies entered Saudi Arabia through the ancient port of al-Uqayr. Camels or trucks then brought the shipments 80 kilometers northwest to Dhahran.

Miller used the car odometers and Brunton compasses to plot findings and directions so geological reconnaissance maps could be created. He devised a larger than usual sketch board for the geologists to use in the cars. It held drafting paper on rollers so that continuous mapping could be done. According to an internal company review of the fieldwork in the initial years of the concession, "Several of the sketch boards were made up in Bahrain and their use during the first two years in Arabia made for remarkable accuracy."

Hoover described the geologists' routine that first season, recalling years later the first trip he and Henry took after moving off the Dammam Dome in November:

Krug and I started operating on the East Coast and we sketched and worked out as far as a little town named Hinna [85 kilometers due west of Jubail] on our sketch-boards, taking a Brunton compass for our direction and our speedometer registering in kilometers for our distance. We had two chronometers. My chore was to wind them up every night just at sunset so we could know what the time was in London, because when we started shooting the stars and getting our latitude and longitude we wanted to be right on the money. We took what we called the mean sea level and went on out as far as Hinna and made a supply depot there.

Workers at Jubail carry cargo through shallow waters from dhows to the shore, circa 1934.



The first exploration camp was established amid the *jabals* of the Dammam Dome in late October 1933. Geologists named the site Dhahran after the nearby *jabals*. By June 1934, the year this photo was taken, the detailing of the Dammam Dome was complete.



## Field Parties

A well-equipped field party during the first few years of exploration typically consisted of the items below:



### PERSONNEL:

|                   |       |
|-------------------|-------|
| Geologists        | 2     |
| Interpreter       | 1     |
| Cook              | 1     |
| Cook's helper     | 1     |
| Houseboy          | 1     |
| Mechanic          | 1     |
| Mechanic's helper | 1     |
| Driver            | 1     |
| Soldiers          | 15-30 |
| Camel drivers     | 3     |

### FOOD:

|  |                               |
|--|-------------------------------|
| Bran   | Asparagus tips                |
| Cranberry sauce                                  | Sliced beets                  |
| Rolled oats                                      | Carrots                       |
| Pancake flour                                    | Clam chowder                  |
| Grape-Nuts                                       | Canned corn, mixed vegetables |
| Spices: cinnamon, cloves, curry, paprika, pepper | Canned olives                 |
| Dried fruit: apricots, peaches, apples, pears    | Canned oysters                |
| Canned peaches                                   | Sweet potatoes                |
| Raisins  | Succotash                     |
|  | Spinach                       |

Heading for the Rub' al-Khali in January 1938 are, left to right, Jerry Harriss, geologist; Shauby and Ibrahim, drivers; Muhammad ibn 'Abd al-Latif, houseboy; Salih, cook; Husain, soldier; Khamis ibn Rimthan, guide; Muhammad ibn Sulayman, soldier; and Tom Barger, geologist.

### EQUIPMENT:

|   |    |                                       |   |
|---|----|---------------------------------------|---|
| Ford V-8 touring car  | 1  | Collapsing tables, chairs and cots    | 2 |
| Ford V-8 half-ton pickup  | 1  | Short-wave radio set                  | 1 |
| Ford V-8 2¾-ton Express body truck (where possible to use trucks) | 1  | Chronometer                           | 1 |
| Baggage camels carrying 400 pounds each                           | 12 | Transit (a surveying instrument)      | 1 |
| 10 foot by 20 foot native tents with grass mat floors             | 3  | Sketch board for use in the car       | 1 |
| 16 foot by 8 foot silk tent                                       | 1  | Brunton compasses                     | 2 |
|   |    | 6-gallon water cans                   | 8 |
|   |    | Water skins holding 6-10 gallons each | 6 |
|   |    | Water bags                            | 3 |

### MISC. EQUIPMENT:

|   |
|---|
| Food supplies for all but the soldiers  |
| Cooking utensils  |
| Gasoline stoves and lamps   |
| Gasoline and oil for the cars (usually carried to first camp by extra camels) |
| Drafting equipment  |
| Tools and spare parts for car repair  |

While their headquarters in Jubail were relatively comfortable, life in the field could be harsh. Sand got into everything, no matter what precautions they took. The thermometer could top 37 degrees Celsius on any given day from early spring through late fall, and in midsummer it could reach 50 degrees. Prickly heat was a constant irritation, and working during the middle of the day in the summer was all but impossible and dangerous to one's health without plenty of water on hand. In the winter, cold winds whistled through the tents and the woolen blankets tucked into the army-style canvas cots—and, of course, the sand continued to blow. In February 1934, Hoover and Henry suffered through an ice storm in the desert, though the temperature soared to 18 degrees the following afternoon.

**AN AERIAL VIEW** Even though the geologists were covering a fair amount of ground with their sketch boards, it became obvious to everyone that, given the enormous size of the concession, a total survey by land would take much too long. The right to use airplanes to prospect for oil in Saudi Arabia was one of the agreements proposed by Socal's attorney, Lloyd Hamilton, and approved by the Saudi government. While the teams of geologists were getting settled in Saudi Arabia in the fall of 1933, talks were already under way in San Francisco to send an airplane for aerial surveys, a technique Socal had been using successfully in California.

### “Do You Remember My Uncle?”

The geologists had only limited contact with the local population during their first year in the field. In nearly every instance, Bedouins or villagers were curious about their equipment, especially cars and trucks. The geologists remained friendly and respectful of local customs, and especially enjoyed interacting with the wide-eyed children who seemed to be peering around every tent flap or mud wall. Soak Hoover recalled one such encounter years later:

We hired a man to watch our stockpile of equipment at Hinna; it had gasoline, food and everything. We would send our camel men in to pick it up. We'd come by every once in a while and often when we did the man that watched it had his little son with him. I thought it was his son. He turned out to be his nephew. He would come and ask us what we were doing and so on and I'd talk to him and play with him.

In October 1965 I was out at Chevron Geophysical [Hoover formed and headed the subsidiary based in Houston, Texas] at my desk, working hard, and the telephone rang. It was San Francisco, our main office. I thought it was some boss going to raise hell with me. A man started talking to me in Arabic. I could tell he was a real Arab. He said, “Do you remember setting up a supply dump in Hinna?” I said, “Yes.” He said, “Do you remember my uncle? I was the little boy that you used to come and talk to and play with. Do you remember that you told my uncle that he should send me to a school and give me an education?... He sent me to school and I got a good education and now I'm back and I'm working in Dhahran for the Company in the Accounting Department.” His name was Ahmed Abdullah Qurishi.

G. Clark Gester contracted with Richard C. “Dick” Kerr, who held a graduate degree in geology from the University of California at Berkeley and was performing aerial surveying for Socal in California, to perform the same duties on a contract basis in Saudi Arabia. Kerr and his partner, Walter English, proposed that the company use a small plane to better navigate around the dunes they assumed covered the entire country. Socal ordered a customized Fairchild 71 from



Supplies were stockpiled in temporary depots around the concession area in the mid-1930s so geologists could continue prospecting without returning to Jubail or Dhahran for fresh stores.



the Hagerstown, Maryland, plant of Kreider-Reisoner. The plane was built with an opening in the bottom and removable windows for taking photographs. It was also fitted with an oversized gas tank, giving the plane a cruising radius of 560 kilometers, and oversized tires to manage takeoffs and landings in sand.

Aviation fuel and other supplies were shipped to Bahrain on the Socal tanker *El Segundo*. The plane was loaded onto the deck of the SS *Exochorda* and transported from New York to Alexandria, Egypt. Kerr and his copilot, Charley Rocheville, after a few weeks of navigating the minutiae of Egyptian bureaucracy, flew the plane to Cairo, Gaza, Palestine and on to Baghdad. From there, they took the plane down the Tigris river valley to Basra and made the final short hop to Jubail on March 8, 1934. There was just one problem: They did not have a permit to land the plane.

The Saudi government tried to have the plane held in Basra, but it had already taken off by the time the government telegram was received by the authorities in the southern Iraqi city. This was a particularly sensitive issue at the time, because Saudi Arabia and Yemen were at war over their disputed border. Saudi officials were concerned that planes might be used for military purposes.

Regional government officials were waiting at the Jubail landing strip when the plane landed and promptly took it and the two pilots into custody. A series of profuse apologies from Casoc for the scheduling oversight followed, as did reminders that the company was allowed to use a plane under the terms of the concession agreement. The plane was eventually returned to its pilots and prepared for aerial reconnaissance.

The plane was put into service March 30, 1934. Miller rode with Kerr and Rocheville on all the flights during the first season, and Burchfiel went on many of them. The plan was to divide the country into 10-kilometer strips. Geologists highlighted the visible geology and terrain of the five kilometers on either side of the plane in flight. They located water holes, camel trails and settlements as well as surface structures. After each flight, a traverse map was drawn indicating the plane's route. Especially interesting features were noted and later photographed to be included in mosaic maps.

Its wings folded and secured for shipping, a customized Fairchild 71 airplane is loaded onto a barge at the site of today's LaGuardia Airport in New York in early 1934, bound, eventually, for Saudi Arabia.



A Casoc pickup truck tows the Fairchild 71 into position for takeoff on a makeshift runway near Jubail in 1934. The aircraft enabled Casoc to map the massive concession area much faster and to supply remote exploration camps, where geologists often stayed for months at a time.

The plane crew accomplished in a single season what would have taken years on the ground. Company records state that “by June of 1934, the aerial crew had photographed and mapped a wide territory which included the entire coastal strip from Ras Safania to below Salwah. A reconnaissance was also made from Jabrin north and west to Es Safa. All of the country between these far points was tied in. Miller plotted the assignments of most of the next year’s geological field parties on the findings made on these April and May flights. All of the production areas that the company would bring in during its first 10 years in existence were seen and noted by the plane party during the spring of 1934.”

These efforts, however, did not leave the aerial team especially optimistic about the prospects for oil in Saudi Arabia beyond the Dammam Dome. As Hoover confided in his diary on April 21, 1934, from the field, “Dick Kerr and Chas. Rocheville flew back to Jubail. They will bring out a load of gas tomorrow and the plane will work from this camp for a few days. Hugh [Burchfiel] at least is most pessimistic about structural conditions in Arabia. They have flown most of the concession without seeing anything at all interesting except Dammam.”

Henry and Miller returned to their work on the Dammam Dome by the middle of May 1934. The original wooden triangulation markers they had placed on the dome had been removed by Bedouins, apparently for firewood. Using metal markers with triangulation flags, Henry and Miller resumed their mapping with an instrument called a plane table. They tied together elevations around the structure and mapped fossil types that corresponded with key geologic periods, indicating the dome mirrored an underground structure suitable for containing oil.

The continuity of the fossil evidence gave the Casoc geologists the confidence they needed that the dome might very well reflect a similar structure in the sedimentary rock capable of trapping oil and gas hundreds of meters below ground. Hoover added: “We placed the well location right up there by the Jebel, which was Um Er Rus [Umm al-Rus], which means mother of heads. ... There are three or four little peaks right up there in the top where the Bedu used to go and look for what was going on around. ... Khamis, our guide, helped me build a little ‘rijm,’ a pile of rocks, to say this was the proposed location for Well No. 1.” (Their guide, Khamis ibn Rimthan, played an increasingly large role in the life of the geologists as their work progressed. He was widely known as Khamis—or Khumayyis—by Casoc employees.)

In May, on his way back from the Hijaz, where he had inspected the concession area that was later awarded to IPC, Nomland stopped in Jubail for his second visit, to discuss with Miller the idea of moving most of the crew to a summer location with a more pleasant climate. Not only would it help them avoid heatstroke, but it would enable them to work together on the reports describing the first season’s work, which would then be sent to San Francisco. They agreed Miller would go ahead of the group to Beirut, Lebanon, scout out possibilities in the hills above the city and then continue to London to meet with company officials and suppliers. By the middle of July 1934, the crew had relocated to Dhour El Choueir 30 kilometers outside Beirut. Left behind were Felix Dreyfus and Allen White, who were manning the Jubail office but took staggered vacations so that at least one Casoc man was on-site throughout the summer.

As the geologists reunited in Saudi Arabia that September for the start of the fall season, the first of many new faces joined the ranks. One of the most significant new arrivals was a

senior Socal geologist, Max Steineke. Steineke, who had graduated from Stanford University in 1921 and had spent the previous 13 years working for Socal in a variety of remote locations, had asked to be transferred to the new operation in Saudi Arabia. He joined the other geologists in Bahrain, where they met to be ferried over to Jubail. Steineke was to lead a new third team of geologists in the field.

Steineke's colleagues soon recognized his acumen in understanding the sort of big-picture geology that was called for in exploring the huge concession. He was also a natural outdoorsman and expert marksman, which helped him earn the respect of the Bedouin soldiers and guides who accompanied the geological parties in the field. He was a rough-and-tumble "man's man" with a face as weathered as a limestone outcropping, and hardly a stickler for details or a fancier of civilized ways.

Steineke doggedly pursued evidence of a geological trend that might as well have been invisible as far as many of the geologists were concerned. Philip McConnell, who joined the production crews in Saudi Arabia in 1938, recalled that "Steineke knew the outlines of the great [al-Na'lah or En Nala, as it was listed in geological records] anticline (the 'Ghawar' field) very early, and knew it might be one of the mightiest oil traps in the world. But he had a lot of German caution, almost to a fault—refused to commit himself in judgment until pushed."

Indeed, as early as the end of his first season in the field (spring 1935), Steineke and his partner, Tom Koch, had seen tantalizing hints in the heart of the concession area of what turned out to be the biggest oil field ever discovered—not just in Saudi Arabia but anywhere. "They described four other ... highlands areas, at least one of which was definitely domed," Casoc company records state, on which they said further work would be justified, but only if drilling on the Dammam Dome found oil in commercial quantities.

#### GOLDEN CORRIDOR

More than 60 percent of the world's proven crude oil reserves and 40 percent of proven natural gas reserves lie in a 2,700-kilometer-long swath of the Middle East, which runs from eastern Turkey down through the Arabian Gulf to the Arabian Sea.

#### KEY

- GOLDEN CORRIDOR
- GAS FIELD
- OIL FIELD



Casoc geologists Max Steineke and Bert Miller, drilling foreman Guy "Slim" Williams, construction foreman Walt Haengggi, left to right, and three unidentified colleagues pause as they look for the best site for the first well on the Dammam Dome. The well was "spudded" on April 30, 1935.

While their recommendations for continued work in the region zeroed in on areas and structures that eventually were recognized as overlying the giant oil fields of Abqaiq, Qatif and Ghawar, marking a structure as worthy of study is far from finding firm evidence of oil. It took at least 15 years before company geologists fully appreciated the underground structures hinted at by the surface features Steineke and Koch identified and marked for further study in the spring of 1935 on their "to-do" list:

1. Drill a test on the El 'Alat Dome.
2. Map Edh Duraiya, el Abqaiq and Qurain in detail.
3. Drill core holes or carry a seismograph survey across Tarut Island.
4. Investigate the highland southwest of Abqaiq.
5. Follow the En Nala monoclinical fold, lying west of Hofuf to the south and northwest to determine its origin.
6. Investigate the Ghawar area, lying west of Hofuf.
7. Introduce subsurface means of investigation to give geological information beneath the sand areas and the overlapping Miocene in certain localities.

**FOCUSING ON DAMMAM** With geologists in the field and at headquarters in San Francisco agreeing that the Dammam Dome was the most promising site for drilling, plans for moving drilling materials and crews into Saudi Arabia began by late September 1934. With some pride, company officials noted the date they formally notified King 'Abd al-'Aziz of their drilling plans—only one year to the day after the first geologists had splashed ashore in Saudi Arabia.

Mobilizing for the drilling program was not just a question of floating a rig across the Gulf from Bahrain and then hauling it through the sand and salt flats to the Dammam Dome site, as formidable as those challenges proved to be. Fred Davies, acting foreman of Bapco operations in Bahrain at the time, argued that the isolation of the site and the extreme summer heat required that the company undertake a dramatic housing program—a small town in the desert—far more elaborate than the bare minimum that might be the norm for such camp facilities. The initial community was to consist of living quarters, a cookhouse, a mess hall and a recreation room. In addition to these living and recreational quarters, an adequate number of offices and a geological laboratory were required. Finally, Casoc would also have to drill water wells, install its own plumbing system and build a power plant.

## “The Origin of Oil”

A broad Middle Eastern corridor running roughly 2,735 kilometers from eastern Turkey down the Tigris and Euphrates river valleys and through the Arabian Gulf region contains more of the world’s proven oil reserves—about 60 percent—than any other place on Earth. It is not a coincidence. The combination of abundant marine life eons ago, giant tectonic plates deep in the Earth grinding into each other and subsequent faults and shifts in the Earth’s crust in the region has created near-perfect conditions for forming and trapping crude oil and natural gas.

Who better to tell the first chapter of this story than Chief Geologist Max Steineke? Writing in the October 21, 1945, issue of *Oily Bird*, as the company’s employee newspaper was called at the time, Steineke provided a primer on sedimentary geology titled “The Origin of Oil”:

In almost all cases, the exact origin of oil is indeterminate, but where positive data is available on the subject, they invariably indicate a marine source, that is, close association with sediments that were originally deposited in the sea but later hardened into rocks. Furthermore, the scientists have found that the rocks producing petroleum are composed of a high percentage of small marine shells most of which are microscopic in size. Also, they have found that in many cases organisms similar to those occurring in rocks that have generated oil are now living in the sea and that these organisms living today contain minute globules of fatty substances from which petroleum-like material can be made in the laboratory.

We have good evidence that the organisms found in the rocks that generated the Arabian oil lived approximately 150 million years ago. They evidently lived in a quiet sea or a somewhat enclosed basin vaguely similar to the Persian Gulf of today except that it was very much larger. As the organisms died they sank to the bottom forming layer upon layer until they formed a deposit hundreds of feet thick. These layers in turn were covered by thick deposits of mud, sand and shell beds, attaining a thickness of many thousands of feet. As the deposits were laid down, the sea bottom gradually subsided due to earth movements, which allowed a great accumulation of sediments with comparatively little change in the depth and character of the sea. As the overburden of later sediments mounted, the deeply buried ones near the bottom were naturally compressed, and they were also heated to hundreds of degrees in temperature due to the great depth. Because of the great pressure and heat applied to the sediments over a period of many millions of years the greater mass of deposits were hardened into rocks. During this change in the character of the deposits the fatty matter in the micro-organisms comprising a substantial portion of the sediments were changed by chemical processes into petroleum products of various types. Intensely salty water, and often brines, with which the sediments were saturated, may also have aided in the chemical reaction whereby the fatty globules in the minute organisms were changed to petroleum products. ...

If a porous rock formation containing water and oil is tilted, the oil will move up the incline. In the event the inclined bed is exposed at the surface due to earth movements and erosion there is nothing to stop the oil and gas from escaping to the surface and being lost by reaction with the atmospheric action throughout geological time. However, if this oil stratum is covered by dense impervious beds and is folded into wrinkles, the oil will migrate into the highest elevation possible in the bed originally containing the oil, but it will be stopped or trapped under the impervious layers. This trapped oil will stay in this position for countless millions of years.



Since Steineke’s time, scientists have developed a much more detailed understanding of the forces that caused these thick layers of oil-bearing sediment to fold into wrinkles. Movements among giant, slowly shifting tectonic plates deep beneath the Earth’s crust have helped form today’s continents, and many large surface features such as mountain ranges often mark the edges along which one tectonic plate slips below or past another. About 90 million years ago, the Arabian tectonic plate collided with, and slowly began slipping under, the larger Eurasian plate to its north and east. That collision created the Zagros Mountains in Iran and the depression, hundreds of kilometers wide, lying parallel to the mountains to the west, which eventually filled in with the waters of the Arabian Gulf. Tension in the rocks created by the collision of two plates, as well as later shifting among rock layers underlying the region, led portions of the sedimentary layers to buckle upward, creating what are known as anticlinal folds that, if capped by impervious layers of rock, serve to trap hydrocarbons.

Today’s Red Sea fills in a depression caused when a rift opened up in the Earth’s crust between Africa and Arabia about 36 million years ago. During the rift, the western side of the Arabian Peninsula was tilted upward and rose to almost three kilometers in elevation. It eroded down, over millions of years, into so-called “basement rocks” of igneous and metamorphic origin, which date back to the Precambrian era and range from 2 billion to 550 million years old. These rocks, forming what is known as the Arabian Shield, bulge eastward at the shield’s midriff and occupy about one-third of the peninsula. More recent lava flows in some areas have spread across these older shield rocks. The shield slopes gradually eastward and is covered in the eastern two-thirds of the country by younger sedimentary rocks called the Arabian Shelf. These are the rocks Steineke described as forming beneath ancient shallow seas during the late Jurassic Period, when dinosaurs roamed the Earth.

**Chief Geologist Max Steineke stands in Wadi Nisab atop exposed limestone dating from the Eocene geologic period. In the Eastern Province, then known as the al-Hasa region, Eocene rock is typically buried beneath hundreds of feet of relatively younger sedimentary layers. When found on the surface, it may indicate the presence of subterranean folds in the rock capable of trapping oil.**

This challenging construction project became the responsibility of one man, Walter Haenggi. By November 1934, Haenggi, a burly construction foreman who had overseen construction of Bapco housing in Bahrain, was striding around the flat area near the Dammam Dome, scouting out a location for the first permanent structures to be built on the site. As the only American detailed for construction, Haenggi knew his first priority was to teach Saudis the skills necessary to do the bulk of the building.

Haenggi and Guy “Slim” Williams, the drilling foreman, also scouted suggested pier locations on the nearby coastline. They determined that a rock shelf extending into the Gulf near the village of Dammam made that location a poor choice. Instead, they focused on a deep channel that swung in relatively close to shore near the village of al-Khobar, about 10 kilometers from the camp and located on a small salt flat (*sabkhab*) near a narrow and descending coastal plain. Floyd Ohliger, a petroleum engineer and later the resident manager of the camp, supervised the construction of the first pier. It was built out of *furush*, a shell-like rock collected offshore at low tide, and cemented with *gutch*, local gypsum. The same materials were used for the initial buildings at the drilling site.



ABOVE This photograph, from the winter of 1937, shows Dammam Wells No. 1, right, and No. 7. The drilling of No. 7 was plagued with difficulties, and on the last day of the year, at 1,382 meters, the well blew out, causing further delays.



RIGHT Guy “Slim” Williams, drilling foreman and later first superintendent of the Dhahran camp, meets with Saudi workers in al-Khobar in 1935. By early 1935, the Dhahran site employed more than 240 Saudis on camp construction projects and drilling teams.

**SPUDDING IN** On April 30, 1935, Slim Williams and his crew of wildcat drillers “spudded,” or started, Well No. 1 on the Dammam Dome—the first in all of Saudi Arabia. Within approximately six weeks, the geologists were forced to call it quits for the summer and retreat to cooler climes to write their reports. Not so the wildcatters, who included William Eltiste, Jack Schloesslin and Ernest Smith. Once drilling started, it took more than hot weather to shut it down. The operation was expensive and the process of stopping and restarting was so time-consuming that it was not a decision made lightly. Once drilling began, it continued until it reached its target zone.

The Dammam Dome drilling program got off to a good start. In August 1935, as Williams’s team approached the depth of the oil-bearing strata in Bahrain (about 610 meters), oil started showing up in the Dammam well—not the commercial-quantity rates they were hoping for by any means (roughly 2,000 barrels per day, or bpd), but clearly oil was present. A test of the well in September at about 590 meters showed oil flowing at a rate of nearly 100 bpd. The crew drilled deeper and sometimes the well flowed at a slightly brisker pace, but not enough oil was found to justify commercial production.

Well No. 1 did yield natural gas in significant amounts, but it was commercially useless to Casoc until the company had the means to store and transport the gas. Engineers temporarily plugged the well after reaching a depth of 725 meters in January 1936. It was eventually deepened and used as a gas well.

## The First Saudi Employees

With the exception of a handful of Saudis in key support positions such as guides, drivers and translators, the oil company had few Saudi employees in its first year of operation. It was not until Casoc decided to build its first pier in late 1934 that Saudis were hired in significant numbers. Floyd Ohliger hired 400 to 500 local laborers to help build the pier, carrying the *furush* rock at low tide from dhows to the shore, where the rocks were carted by tractor to the construction site.



Casoc resident manager Floyd Ohliger, shown wearing a checked jacket, oversees a delivery of *furush* rock in 1935 that was used to build the al-Khobar pier. To his left is Ahmad “Mussolini” Al-Somali.

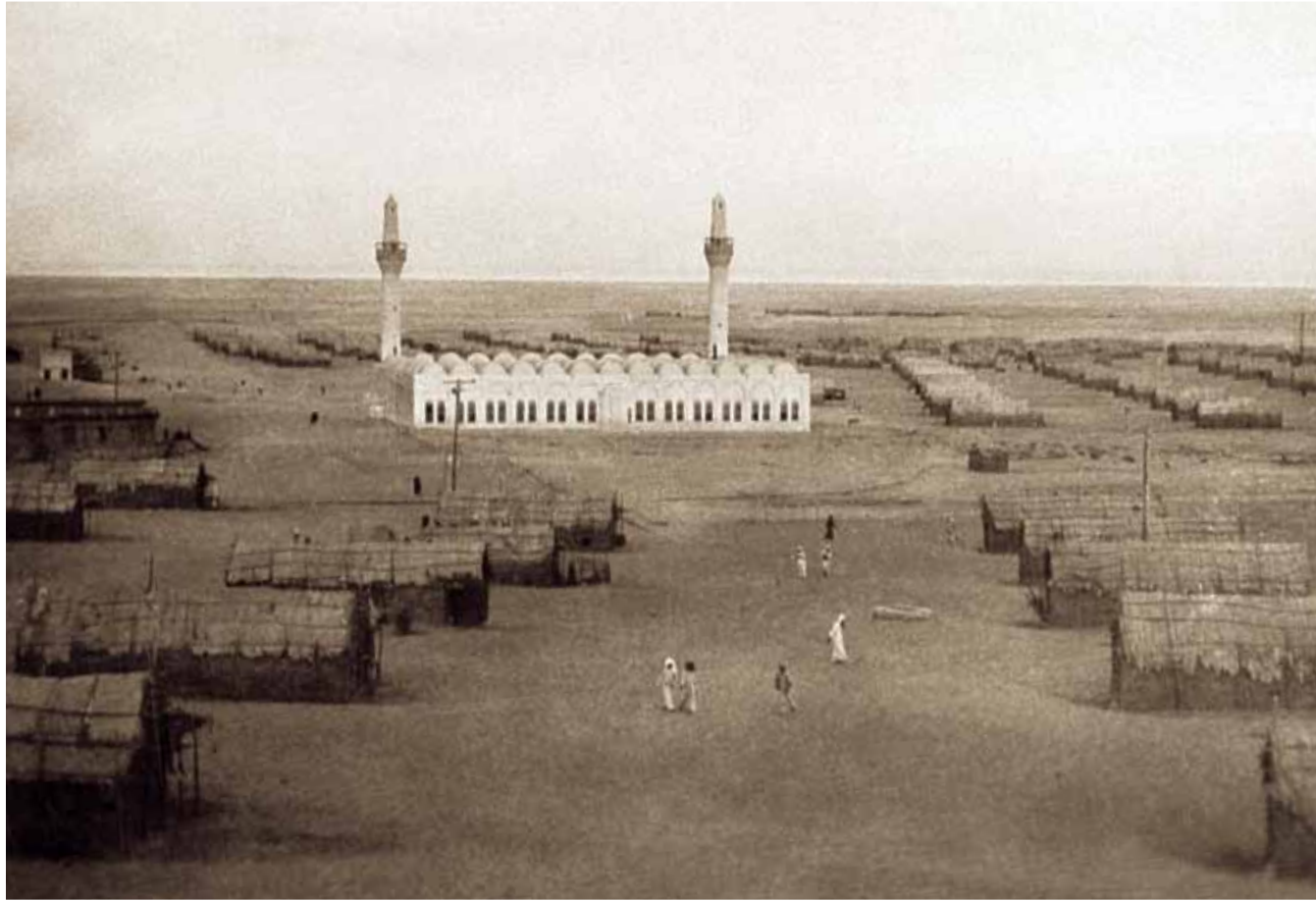
One of the best known among the early Saudi construction workers was Ahmad Hussain Al-Somali. His nickname among the Americans was “Mussolini,” due to the ease with which he spoke Italian. Al-Somali worked side by side with Ohliger on the pier at al-Khobar and in 1939 was assigned to the Transportation Department. One of his first jobs was to drive company officials on the arduous, five- to seven-day journey between Jiddah and Dhahran—a trip undertaken at the time without the benefit of graded roads or radios with which to summon help if needed. He joined Government Relations in 1943 and was involved in handling passports and customs clearance for arriving company employees at Dhahran Airport and the al-Khobar pier until his retirement in 1984.

The success of the pier project, completed in the spring of 1935, encouraged Casoc managers to hire Saudi workers in greater numbers and slowly train them for skilled work. Even before the pier was completed, Saudis were also being hired by the hundreds to work at the Dhahran campsite. More than 240 Saudi men were employed on the site as of early 1935, and their numbers swelled nearly tenfold by the end of the decade. Concurrent with the construction of buildings for the American employees on Dammam Dome, crews built palm frond-covered *barastis* for Saudis as well, with several workers living in each dwelling.

The team was learning as it went. Well No. 2 was spudded on February 8, 1936. It showed more promise, and in June, at a depth of about 660 meters, a test showed oil flowing at the equivalent of more than 3,800 bpd before being temporarily plugged: Casoc did not have enough tanks ready to store that amount of oil.

That was all company directors in San Francisco needed to hear. Approval was quickly given for drilling at al-Alat, a site 32 kilometers west of the Dammam Dome that had looked promising to geologists during the 1934–35 season, and approval was also given for Well Nos. 3 through 6 to test the oil-bearing potential of the structure at Dammam Dome.





At the Dhahran camp in the 1930s and early '40s, nearly all Saudi workers lived in *barastis*, made of woven palm fronds. The mosque, which was built mainly by workers from today's Yemen and was known as the Mosque of the Adenese, was a gift from King 'Abd al-'Aziz.

The word *cautious* could hardly be applied to the “combined frame of mind of Casoc officers,” once Well No. 2 showed substantial amounts of oil, as an internal company history later noted. The history continued: “Regardless of admonitions from the field, expansion was already a reality. Besides the five wells authorized in June, a deep test, Dammam Number 7, was decided upon in July. Davies was told to secure all possible materials from the Bahrein Petroleum Company, then to advise San Francisco of his needs. Such employees as could be spared were to be transferred from Bahrein and others sent out from the United States to fill office, construction and oil field positions.”

**TOO GOOD TO BE TRUE** Soon, cautious optimism gave way to despair. The early promise of drilling on the Dammam Dome did not lead to much oil production in the first year. One by one, the wells that had been spudded with such enthusiasm sputtered when it came to delivering oil. Even yields from Well No. 2, which had prompted much optimism, fell off dramatically as it was drilled deeper, settling back to a few hundred bpd. Well No. 4 went to 710 meters and did not produce a drop of oil—the first dry hole.

While failing to produce commercial quantities of oil on the Dammam Dome, by the fall of 1936, Socal was having issues of another sort with its operation in Bahrain. Bapco wells had an estimated production potential of 30,000 bpd, and the company had built a small refinery in Bahrain with a capacity of 10,000 bpd. Shipping facilities with submarine lines leading out to deep-water moorings were in place. However, Socal's Bapco had no marketing capacity to sell oil east of the Suez Canal or in Europe. Building such capacity would be an expensive and time-consuming challenge.

The Texas Company, headquartered in New York City at the time, was faced with the opposite problem. It had the marketing infrastructure, directly and through agents from Europe, Africa, Australia, the Far East and China. However, to sell through these agents, the company had to ship oil from the United States, mostly from its namesake state, because it did not have any production in the Eastern Hemisphere.

The two operations were a natural fit. A series of stock- and asset-transfer transactions in July 1936 led to the transfer of The Texas Company's eastern marketing operations to a jointly owned, newly created subsidiary of Bapco called the California Texas Oil Company, Ltd., or Caltex. In December 1936, Socal and The Texas Company grew closer together when The Texas Company bought one-half interest in Casoc for \$3 million in cash and \$18 million to be paid out of The Texas Company's share of future oil sales.

**IPC ESTABLISHES A Foothold** In mid-1936, while Socal was focusing on Bahrain and its transactions with The Texas Company, the Saudi government was finalizing terms under which it would grant a second concession for the right to explore for oil on the opposite side of Saudi Arabia. This concession covered a strip 100 kilometers wide along the Red Sea coast from the northern border with Transjordan down to the Yemeni border and including the Farasan Islands in the Red Sea near the coastal town of Jaizan. In 1912, while the Jaizan region was under the rule of the Idrisi dynasty, Shell Oil had managed to acquire a concession to drill for oil on and around the Farasan Islands, where sailors had been aware of oil seeps for centuries. After drilling in several locations, however, Shell failed to find oil and abandoned the project.

Petroleum Concessions Ltd., a subsidiary of IPC, signed an agreement with the Saudi government on July 9, 1936, for the right to explore in the western concession area. It agreed to make a onetime payment of £30,000 and an annual rental fee of £7,500 for an initial four-year exploration period. Rental fees and other advances against royalties would kick in during a subsequent 10-year drilling program. None other than Stephen Longrigg, who had sailed out of Jiddah three years



Giant sinkholes along the Tuwaiq Escarpment and other limestone cliffs near Riyadh expose millions of years of sedimentary rock. Evidence of an anhydrite layer here in Dahl Hit may have led geologist Max Steineke to surmise that the same rock extended beneath the surface of much of the al-Hasa region. If so, the impermeable anhydrite would act as a seal or cap for petroleum reservoirs.

earlier complaining that his parsimonious directors had missed a chance at the al-Hasa concession, personally signed the western concession agreement. (Socal had sent Nomland to investigate the possible concession, but the available evidence made finding oil seem a long shot. Considering the Saudi terms too onerous, the company declined to bid.)

If IPC felt a sense of accomplishment at finally getting a foothold on the peninsula, it proved to be short-lived. It began geological work in November 1936 and, by the end of the summer of 1937, had determined that the greater portion of its concession lacked the potential for producing oil. IPC confined its exploration to drilling a number of wells in the Farasan Islands until 1939, when work ceased altogether due to a lack of results.

**THE DARK DAYS** By the early fall of 1936, the Casoc geologists sensed trouble. The rock strata under the Dammam Dome at a depth where oil had been found on Bahrain were not producing as expected. Rumors spread that officials in San Francisco were beginning to have second thoughts and were trying to cut back on expenses wherever they could. Davies later recalled this period as the “dark days” when “there was a lot of apprehension felt that maybe Saudi Arabia had not been a good gamble after all.”

### “What’s Your Number?”

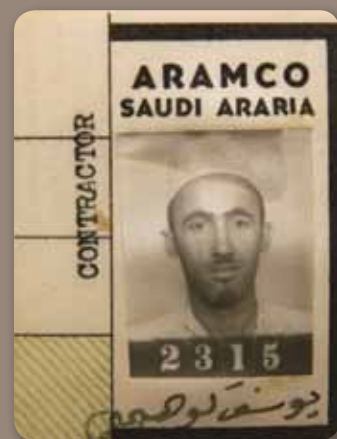
Today every Saudi Aramco employee has an identification badge with an employee number. However, this has not always been the case.

Laundry workers in Bahrain wash clothing in a spring-fed creek in the 1940s. The numbering system used to track laundry was adopted by Aramco as the basis for its employee badge numbers. The 1940s-era badges of Frank Tracy and Yousef Al-Koheji are shown below.



Casoc’s original operations were small enough that all record keeping was done using employees’ last names. The only real confusion occurred when laundry was shipped weekly to an Indian cleaning service in Bahrain, where the clothes were washed in what became known as Button Creek, the runoff from an artesian spring. Clothes were mixed up when they were washed, and employees often received the wrong garments. The later influx of workers exacerbated the problem. To address this concern, in 1938 the company started assigning numbers that employees could use to label their laundry. These numbers were generally assigned chronologically in order of employment with the company. Vacated numbers were reassigned to new employees when they arrived.

The number system worked so well for laundry that it was gradually used for other purposes. Bahrain store owners, for example, started accepting chits with employee laundry numbers on them instead of having employees haul bags of coins. Charles Rodstrom, Casoc’s agent in Bahrain, redeemed the chits from merchants and forwarded them to Dhahran where they would be deducted from employees’ “field allotments.” In 1944, the company started using the laundry numbers to keep track of employees in all personnel systems. Floyd Anderson, who was in charge of laundry at the time, assigned himself No. 1, but typically the lower I.D. numbers corresponded to the earliest employees. For example, ‘Abd al-‘Aziz Al-Shalfan, Aramco’s longest-serving employee when he died in 1983, was No. 4. Over the past six decades, the I.D. numbers have become longer and the badges more intricate—the numbers are now supplemented with bar codes, and holograms ensure the authenticity of the badges—but they remain the primary means of administrative identification.



While some geologists began to second-guess themselves, Steineke stood firm. Not only did Steineke avoid becoming distracted by the drilling problems in 1936, but he was using what Davies described as his rare “ability to tie together obscure and isolated bits of information that most men and even most geologists would miss completely.” Steineke, who was named chief geologist in 1936, was in the process of identifying what Davies described as “certainly, the outstanding monument to Max’s unusual abilities in Saudi Arabia.”

Davies recalled suffering through one particularly hot and hazy day in the latter part of 1936:

Max came to me and said, “Fred, I want to take you out and show you the next Saudi Arabian oil field.” That sounded good to me. All we had was Dammam, so we drove out southwest in the direction of where Abqaiq is now. ... Max got out just like a bird dog, started out through those sand dunes. Every one looked exactly alike to me, and we finally landed up in a little cup between the sand dunes ... in which there was an outcrop of Eocene limestone. Max bent over and knocked off a hunk of rock, held it up with great pride and said, “See that, Fred, that’s Eocene limestone. ...” He pointed out a distance of five miles [eight kilometers]—and I couldn’t see a quarter of a mile [400 meters]. “That’s Jebel Dam.” And then he pointed out, “See, that’s Jebel [Ghuraymil],” which was 10 miles [16 kilometers] away. ... Oil, he said, in both these places had to be below the ground. “So, therefore, we have a structure there and we ought to drill it.” I looked at him in astonishment, and I wouldn’t dare contradict him—“Certainly you may be right, but I can’t even see what you are pointing at.” But his enthusiasm was such that in a short time we drilled right at that location and we found this big Abqaiq field.

With the help of observations from his teams, Steineke had been able to deduce a considerable amount of information from surface indications, including the probable location of the Abqaiq field, which was confirmed by exploratory drilling a few years later.

Yet the geologists still lacked a comprehensive understanding of the sedimentary rock strata underlying the huge concession. To help fill in the massive gaps in their knowledge, a team led by Henry began a program of structure drilling in November 1936. Structure drilling, a technique adapted by Steineke in response to the challenges posed by the sprawling Saudi concession, involved drilling a number of relatively shallow wells of about 300 to 610 meters to acquire samples of the underlying rocks. (Many of these wells were later turned into water wells for the Bedouin tribes.) The samples from areas hundreds of kilometers apart were compared to check, for example, for continuity of a particular layer of limestone at a given depth. It took months, however, for the teams to begin comparing results and drawing conclusions.

**DAHL HIT** In late March and early April 1937, while the structure-drilling program was continuing, Steineke made what many Socal geologists later realized was a historic trip. He led a large party, including Lloyd Hamilton and Fred Davies from the Dhahran camp, to Riyadh and then on to Jiddah, where Hamilton caught a steamer back to Socal’s London office and Davies continued on to San Francisco.

On the return trip, Steineke, accompanied by chief mechanic Floyd Meeker, significantly expanded his understanding of Arabian geology. The region they passed through west of Riyadh marks the boundary between the ancient basement rock of the Arabian Shield and the sedimentary layers of the Arabian Shelf. In many places along this interface, giant escarpments (or cliffs, the most prominent being the Tuwaiq Escarpment) and deep wells or collapsed depressions reveal hundreds of millions of years’ worth of sedimentary layering.

Just what Steineke observed on this trip and what conclusions he reached remain a matter of conjecture. His journal notations do not provide absolute evidence. A veteran Saudi Aramco geologist, Tom Keith, later pored over Steineke’s field books for a history of company geologists and offered his insights about the return trip:

He took his time coming back and used the opportunity to study the geology, especially the outcrops around Riyadh where the carbonates [limestone layers] of the Jurassic Arab Formation are exposed. He visited and photographed “Dahl Hit,” a collapse feature [sinkhole] exposing the contact between the anhydrite and the porous Arab carbonates. This was significant because anhydrite makes an excellent cap or seal for oil reservoirs. However, Steineke could not put two and two together yet. When No. 7 began to return anhydrite drill cuttings on November 10 at 4,190 feet, a light bulb must have gone off in Steineke’s head. If this was the same anhydrite he had seen hundreds of kilometers away near Riyadh, then it meant that this perfect sealing rock extended all across the peninsula. His defense of continued deepening of Dammam #7 to the oil-bearing rock strata must have drawn on this insight.

**PUTTING ALL THE MONEY ON NO. 7** Meanwhile, the deep-drilling program at Well No. 7 offered little hope. By July 1937, the well was barely past the Bahrain zone at about 730 meters. Five months later, in October, the well was only at one kilometer, still shy of the target zone. Based on the evidence the geologists had been accumulating, Steineke, Skinner (now back in San Francisco) and Davies (who replaced Skinner as general manager in Dhahran) all agreed on the depth they should be shooting for. Skinner wired Ohliger in Dhahran on November 10, 1937, and ordered drilling halted on all other wells “because we prefer to await further results” on Well No. 7.

On the “stabbing board” about 6 meters above the derrick floor, veteran drilling foreman Les Hilyard, left, and two unidentified members of the drilling crew prepare a spiral-cable drill bit for service. The success of the Arabian oil enterprise rested in the hands of the teams drilling Well No. 7, the only active drilling project as of late 1937.



## Dhahran Domesticity

A very welcome distraction during the tense months of 1937, as everyone monitored the progress of the deep-drilling test on Well No. 7, was the arrival of the first expatriate wives and children in Dhahran. During the geologists’ first summer in Lebanon, Krug Henry met and married a young woman of Egyptian and French heritage, Annette Rabil. In April 1937, with appropriate housing now in place, Mrs. Henry (with the Henrys’ daughter, Mitzi, in tow) and Nellie Carpenter were the first family members to join their husbands in the new village in the desert. They and their husbands lived in two of the six portable cottages that had been delivered the previous year, complete with air conditioning. Several air-conditioned bachelor bunkhouses had been delivered as well. In September, after the worst of the Arabian summer had passed, Edna Brown; Erma Witherspoon and her daughter, Marilyn; Patsy Jones; and Florence Steineke and her daughters, Maxine and Marian, also arrived at the camp.



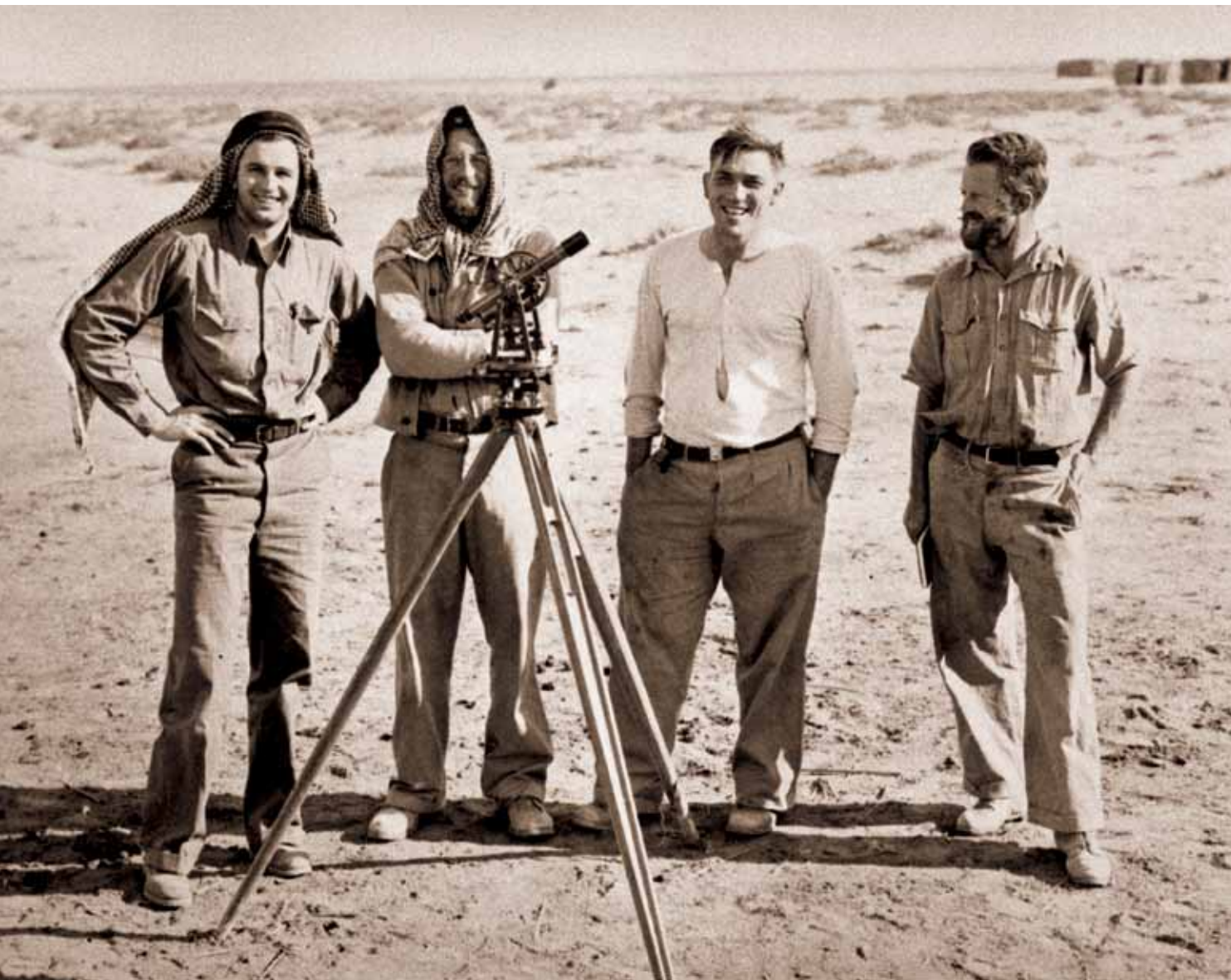
The first Western wives and children of oil company workers to set foot in the Eastern Province were welcome arrivals in 1937. The children in the front row, from left to right, are Mitzi Henry, Marian Steineke and Maxine Steineke. Teenaged Marilyn Witherspoon is second from the left in the back row. Florence Steineke stands directly behind her daughter Maxine.

The women and children drew the attention of the roustabouts and drill crewmen the way magnets attract iron shavings. Gifts were delivered to their doors, and the children were showered with pets. Burly men delivered cuddly baby animals, including gazelle and saluki pups, knowing they would bring joy to the newly arrived children.

Maxine Steineke, nearly 7 years old when she arrived in Dhahran, particularly impressed the men with her jaw-dropping command of cribbage. She was invited to join in a friendly game a few of the men were having and within a few weeks dominated the board. Years later, Maxine recalled that the men enjoyed convincing an unsuspecting newcomer to give Maxine a game. The oil field worker would assume he would have to go easy on the precocious child, only to sit dumbfounded as Maxine nearly always trounced all comers.

Maxine and her younger sister, Marian, who were homeschooled by their mother during the week, anxiously waited for Fridays, their father’s day off. They often went swimming in the shallow waters of the Gulf, mindful that sharks were regularly seen patrolling farther out. At other times they followed in their geologist father’s footsteps and searched for shark teeth on the *jabals* behind the small camp. Another favorite activity was dune driving. Max would drive up the gradually sloping back of a dune and then drive over the crest of the steep face of the dune. The girls screamed with delight as the sand face of the dune beneath the vehicle broke away and slid with the car to the dune’s base.

Simply put, this dictum left all of Socal's money riding on one well. Lester Hilyard, a veteran drilling foreman, was transferred from Bahrain to Saudi Arabia in February 1937 specifically to work on this project. Drilling often ground to a halt as the crew awaited spare parts or for drill bits to be repaired in the machine shop in Bahrain. Hilyard vividly recalled the sense of unease around the camp as the months passed amid mounting rumors that the entire enterprise was riding on the success of Well No. 7: "Although in the beginning each day of drilling seemed to be more discouraging than the day before, the company continued a certain amount of building in progress throughout 1937, maybe to demonstrate to the King that it wasn't ready to give up. It had been rumored for some time that, not only the King of Saudi Arabia, but some of the chiefs back on the reservation (Socal in San Francisco) were getting restless."



Geologists Tom Barger, Walt Hoag, Max Steineke and Jerry Harriss, left to right, pause during surveying near Salwah in 1937. Barger, a future CEO of the oil company, quickly caught the attention of Chief Geologist Steineke.

**REMARKABLE RELATIONSHIP** On December 14, 1937, with all the attention focused on a visit of Crown Prince and future King Sa'ud ibn 'Abd al-'Aziz to the area, it was not likely that too many people noticed another arrival that afternoon: a bespectacled, lovesick young geologist named Tom Barger. Barger, who rose through the ranks to become one of the most influential CEOs in the oil company's history, had secretly married less than a month before in North Dakota and left his young bride, Kathleen, to live with her parents while he joined Casoc's exploration effort in Saudi Arabia.

Barger quickly realized how fortunate he was to be working with a geologist as insightful and intuitive as Steineke and with Khamis, the gifted guide. The three men spent many weeks over the next few years working elbow to elbow during the day, mapping elevations and searching for geological outcroppings or other signposts. At night they swapped stories about *jinn* (or genies, supernatural spirits), and cowboys and Indians, around the campfire. Barger recognized the kindred spirit his two compatriots shared and in the process revealed his own uncanny skills at acknowledging an individual's abilities, regardless of background. It was a characteristic that served him well throughout his career with the company:

I am still amazed that in a month's time I met and became good friends with perhaps the two most remarkable men I was ever to encounter in my life. Max Steineke and Khamis ibn Rimthan, though born on opposite ends of the earth and as physically different as they could be—the one, big and boisterous; the other, a rangy and slightly self-effacing man of medium height—were effectively cut from the same cloth. Energetic, intelligent men, when subjected to physical hardships, stinging winds, poor food and worse water, they never mentioned it unless it was an occasion for a good joke.

On the desert, Khamis was never lost. For in addition to his sixth sense, a sort of infallible, built-in compass, he had an extraordinary memory that could recall a bush that he had passed as a young man or the directions to a well that someone had told him about 10 years before.

Under the desert, among the strata of rocks and sediment that are the geologist's domain, Max was much the same as Khamis, able to relate an outcropping he might find on the coast to a paragraph in a thick geological report that he had read years earlier. Figuratively as well as literally, they both seemed always to know where they were and where they were going next.

### Global Positioning

The American geologists arriving in Saudi Arabia in the 1930s took great pains to track their position—using theodolites and other instruments to calculate latitude, getting the precise time from radio signals to mark longitude, and calibrating car odometers to help plot their progress across kilometer after kilometer of what often seemed a wasteland of sand, gravel and salt flat. Khamis ibn Rimthan and other Bedouins who worked with the oilmen had no need for such aids. For them, the desert features in all directions were nearly as easy to read by day as the free road maps that were popular handouts at U.S. gasoline stations. By night, Bedouins followed illuminated signs—provided gratis by the stars and planets.

Of the many Bedouins who worked closely with the Casoc geologists in the early years of exploring the concession, Khamis's outgoing nature and extraordinary guiding skills made him a natural favorite. A member of the 'Ujman tribe, which had rebelled against the King when he was unifying Arabia's diverse tribes and regions under his control, Khamis had migrated with many of his tribesmen from al-Hasa to the southern reaches of present-day Iraq in the 1920s in search of safer grazing lands. In an indication of the importance that King 'Abd al-'Aziz put on the success of the exploration venture—and of Khamis's renowned abilities—the governor of al-Hasa, who was also the King's cousin, personally sent for Khamis to return to his native region to help the geologists find their way across the poorly mapped expanses. Khamis quickly bonded with American geologists, such as Tom Barger and Max Steineke, and left them in awe over his navigational and survival techniques. He worked with the oil company until his death from cancer in 1959. However, his legacy did not end there. The company named the Rimthan field in honor of him after it was discovered 95 kilometers east of Qaisumah in 1974.



Legendary Bedouin guide Khamis ibn Rimthan, right, and his fellow guide Muhammed 'Ali Al-Kathiri, shown in April 1935, played crucial roles in helping early geologists navigate both the deserts and local customs.



Philip McConnell arrived in Saudi Arabia in 1938 and served as Casoc's chief petroleum engineer during the war years. He later wrote a book, titled *The Hundred Men*, based on his wartime experiences.

### Foreign Correspondents

Letters to family and friends from oil company geologists and engineers in Saudi Arabia during the 1930s and '40s provided unique "snapshots" of life in the oil camp and on the still largely untamed and exotic deserts of Arabia. Nestor John Sander was a young paleontologist in 1938 and one of hundreds of new Casoc hires following the successful drilling of Dammam Well No. 7.

Sander worked for Socal for a few months in California before being sent to Saudi Arabia in November 1938. He and two geologists embarked on a monthlong odyssey across the United States, Europe and the Near East en route to Dhahran, an adventure typical of the journeys undertaken by the next generation of oilmen to be summoned to the desert to build upon the promise unleashed by the discovery of Well No. 7. Sander later recalled his first days in camp:

At that moment Dhahran, as I saw it, was a rather broad street, unpaved; on one side there was a dining hall and the drillers' quarters, which was a two-story gutch-coated building, while the dining hall next to it was but one story.

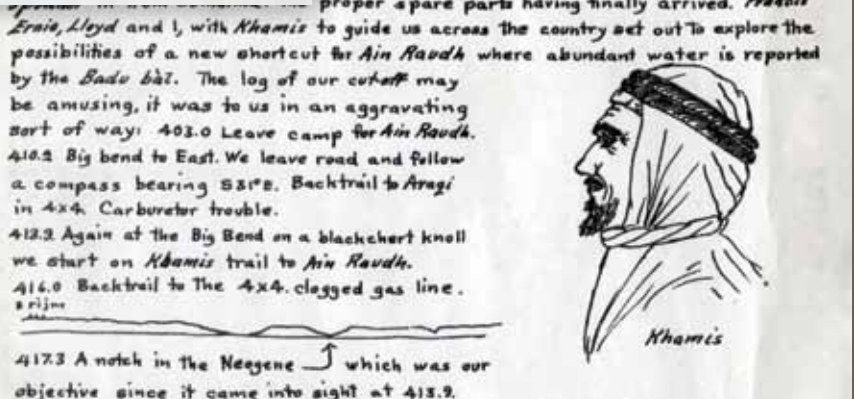
On the other side of the street was the little paleo lab, a tin-roofed shack that also housed the telephone exchange and a number of other buildings. And on the hill at the north end of the street were a few tanks. I imagine most of them were for water, because there really wasn't any significant production at that moment. ...

... I slept for the first month or two or three in the hallway of the driller's hotel or whatever you want to call it. There was a series of rooms on the two floors, and each driller had his own room and in that room was a window air-conditioner. Central air conditioning was installed later, but it was not available at that time. They slept cool but in January, February and March the temperature is bearable. But my main problem was that the drillers changed shifts at midnight, so there I was on my cot in the hallway, and these people were going by, which didn't help much.

After three or four months they constructed a series of green metal cabins under a palm-thatched roof. And they were air-conditioned, so I was very happy when that happened. For the first three weeks I remember that I didn't know if I wanted to be there or not. A tinge of homesickness and loneliness.



Pat Doyle, a gifted young draftsman as well as geologist, illustrated his letters home with drawings of Arabian landscapes, wildlife and people.

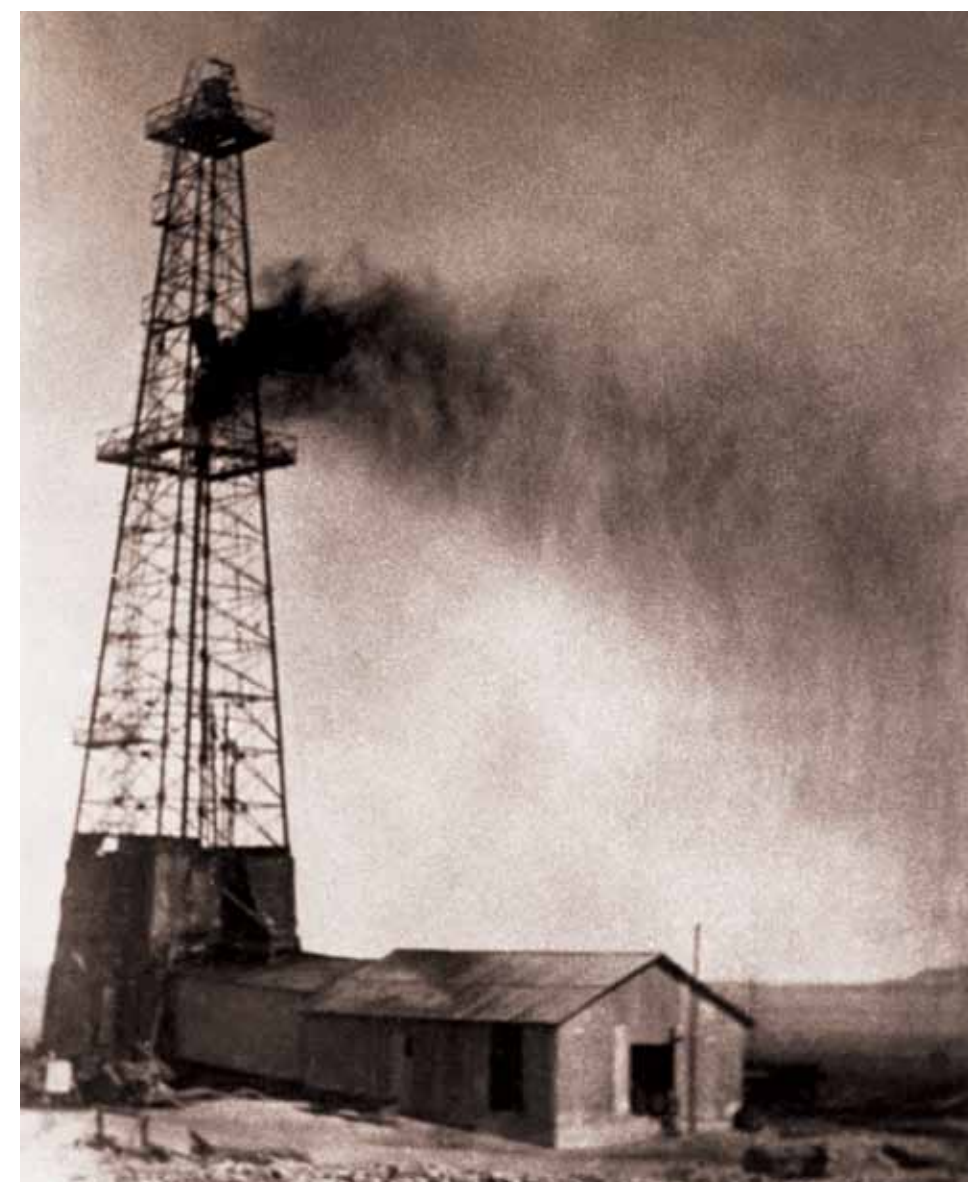


... Frank Smith, who was in Sumatra when the Japs came let boat to leave, both of which were sunk in the ... were rescued is Francis Stone's relief driller on ... the Sahib mechanic leave today to bring the proper spare parts having finally arrived. Francis ...

In the early years of the concession, the geologists and Khamis developed a relationship that was more the exception than the rule. Khamis was hired specifically for his specialized skill and worked with highly trained, well-educated men who valued his abilities and unique personality. Most Saudis during this period were hired as unskilled construction, transportation or drilling crew workers. They had to be taught almost everything they needed to know on the work site. Their histories were not as well recorded by the American oilmen as Khamis's, yet their contributions were vital to the success of the industry they were helping to build.

Barger made a unique contribution to chronicling the early history of the company through his letters home, collected by his son Tim and later released in the book *Out in the Blue* in 2000. The letters provide a snapshot of oil camp life in the late 1930s and early 1940s, years that marked a turning point in the development of the concession in Saudi Arabia. The initial period of exploring untamed spaces and carving a drilling site out of the unmarked desert was drawing to an end.

**NEW ERA** By the early spring of 1938, after almost five years of grinding effort, multiple false starts and dashed hopes only to be followed by new intimations of success, Dammam Well No. 7's ultimate fate—indeed the fate of the entire Arabian enterprise—was being debated by Socal department heads in San Francisco. One question was on everyone's mind as they pondered what to do about Well No. 7: "What does Max Steineke think?"



BELOW The October 16, 1936, issue of the *New York World Telegram* carries optimistic news of Socal's prospects for finding oil in Saudi Arabia.



LEFT An unidentified well in Dhahran blows traces of oil in early 1938. A test of Well No. 7 on March 3, 1938, signaled the beginning of a new era: Saudi Arabia had joined the ranks of oil-producing nations.



A temporary tent city, home to King 'Abd al-'Aziz and nearly 2,000 people, bloomed in the desert north of Dhahran near Abu Hadriya where Casoc had a wildcat exploration camp. The King made his first visit to Casoc facilities in the spring of 1939 to celebrate the loading of the first tanker with Saudi oil.

With hundreds of American and Saudi workers now on the payroll, Socal had already invested millions of dollars exploring and drilling in the region. Yet to this point, the company had not produced enough oil to sustain the enterprise. The lack of commercial viability was keeping a lot of people awake at night.

Socal had pulled the plug on foreign drilling ventures before. Maybe it was time to stop throwing good money after bad, particularly at a time when the U.S. economy had slipped into what became known as the "Roosevelt Recession" at the beginning of the U.S. president's second term in office in 1937. Oil demand was declining.

Everyone in the oil business knew that drilling for oil was risky enough under the best of circumstances, and at this moment, Lonely Well No. 7 seemed a long way from becoming the first commercially viable well in Saudi Arabia. The issue of what to do in al-Hasa prompted Clark Gester, one of the company's chief geologists, to recall Steineke to San Francisco for consultation. It was time for headquarters to hear directly from the senior geologist in Saudi Arabia.

Steineke had a reputation for astounding intuition when it came to piecing together far-flung geological clues and extreme caution when it came to drawing conclusions from them. His natural inclination was to make one more survey to be sure, but time had run out. Drawing on the years of fieldwork he and the Casoc teams of geologists had conducted in the Saudi desert, the scores of reports they had produced and his own encyclopedic knowledge, Steineke knew there was only one valid message to convey: Keep drilling.

While Socal's leaders tossed and turned in their beds pondering the fate of their vast and seemingly beleaguered Saudi Arabian venture, oil field employees half a world away were dancing in their work boots. A telegram dated March 4, 1938, arrived in San Francisco announcing that Dammam No. 7 was producing at a rate of 1,585 bpd at a depth of nearly 1½ kilometers in what would become known as the Arab Zone of porous limestone.

The initial camp at Ras Tanura, a sand spit 64 kilometers north of Dhahran, was composed of portable bunkhouses, shown here in 1939.



News of the oil find spread across Arabia by telegram as rapidly as it did to the company boardroom in San Francisco. Government ministers in Jiddah excitedly clamored for more information about when commercial production might start and oil revenues would begin to flow into government coffers. Casoc's government representative William J. "Bill" Lenahan did his best to keep Saudi expectations under control.

Testing continued over subsequent days—No. 7 reached 3,690 bpd on March 7—until the well had produced more than 100,000 barrels. In short order, Well Nos. 2 and 4 were deepened to the same zone and also hit oil. By this point there was no question that oil existed in commercial quantities in Saudi Arabia, even though the official announcement was not made until October.

Meanwhile, a race began to build facilities to get the newly discovered oil to market. Gathering tanks, pipelines and a small terminal at al-Khobar were completed in a matter of months, and the company began shipping oil by barge to the Bapco refinery in Bahrain by September 1938. Casoc formally declared to the Saudi government that it had achieved commercial production on October 16, 1938.

While the facilities at al-Khobar were still being finished, work had already begun on another collection and distribution system to transport oil through a 25-centimeter-diameter pipeline to the sand spit known as Ras Tanura, about 65 kilometers north of Dhahran. There, submarine loading lines leading to deep-water moorings enabled tankers to pull within roughly one kilometer of the shore and take on oil. Casoc surveyors and other employees also worked closely with the British Admiralty's Hydrographic Department to update charts, with new channel soundings providing tanker captains and harbor pilots with a clear and safe path to the Ras Tanura terminal moorings.

On May 1, 1939, King 'Abd al-'Aziz, to celebrate the loading of the first oil tanker at Ras Tanura, personally opened the valve that enabled oil to flow into the Socal tanker *D. G. Scofield*. The celebration was a major event and also included the leading princes and other male members of the royal family; other prominent government officials, with Minister of Finance Al-Sulayman in the fore; and merchants, attendants, friends and servants. The royal companions and guests numbered nearly 2,000 people, who arrived in more than 400 cars from Makkah, Jiddah and Riyadh. The guests lived in a city of 350 tents near Dhahran for several days of events, tours, dinners and speeches.

As he turned the valve to start the flow of oil, King 'Abd al-'Aziz literally and figuratively connected his underdeveloped nation with the industrialized world. He and the oil company executives present had every reason to think that Saudi oil would quickly bring wealth and a better way of life for the Saudi people. They had no way of knowing that world events were about to intrude on their plans. Already, geopolitical fissures presaging the outbreak of World War II in Europe were heightening diplomatic tensions in Saudi Arabia. The ensuing global conflagration set back oil exploration and production in Saudi Arabia for years to come.



King 'Abd al-'Aziz, shown at center left wearing a red-checked *ghutra*, prepares to turn the valve that will send Saudi crude oil to the waiting tanker *D. G. Scofield* on May 1, 1939.

CHAPTER FOUR

# The War Years



Abqaiq, early 1940s.





King 'Abd al-'Aziz meets U.S. President Franklin D. Roosevelt in February 1945 aboard the USS *Quincy* in the Suez Canal zone. Acting as interpreter is Colonel William A. Eddy (kneeling), who later joined Aramco as a Government Relations consultant.

The Dammam Dome discovery did not occur in a vacuum. Even before commercial oil production was announced on October 16, 1938, Saudi Arabia was being drawn into the swirl of international power politics.

The world's industrial and military powers were coming inexorably closer to the start of the next global war, and they were hungry for natural resources. Saudi Arabia's asset—oil—and strategic location, between East and West, propelled the young nation and its people into the middle of the global power struggles that accompanied the coming world war. The Axis Powers made gaining access to Saudi and other Middle Eastern oil fields a critical element of their strategy. Casoc employees prepared for the worst, ready to plug wells and destroy facilities rather than let them fall into Axis hands.

By the late 1930s, William Lenahan was a thick-skinned veteran of negotiations for the company. Having represented Casoc's interests in Jiddah since October 1933 following a six-year stint as Socal's negotiator with the Venezuelan government, he had earned the respect of King 'Abd al-'Aziz and most of the government's top officials. Indeed, in Lenahan, the King had found a worthy opponent known for his forthright advocacy of Casoc's rights as stipulated in the concession agreement. Although Lenahan knew how to be charming when necessary, he had learned early on that Saudis respect a direct and honest adversary over a fawning sycophant. He did not hesitate to go over the heads of government officials and appeal directly to King 'Abd al-'Aziz on key matters in dispute. As King 'Abd al-'Aziz told Socal attorney Lloyd Hamilton, "I like Lenahan because I know Lenahan, and I know Lenahan because I have fought so much with Lenahan."

**GLOBAL INTRIGUE** The first tanker shipment of oil in May 1939 was, of course, a momentous event. But a more crucial drama was being played out behind the scenes, one that had far-reaching consequences for the futures of both Casoc and the Kingdom. On May 9, few likely noticed when Lenahan, who was in Dhahran for the ceremonies, King 'Abd al-'Aziz and a few key officials slipped away for a private conference in the Saudis' sprawling tent city outside Dhahran. Lenahan marshaled all of his diplomatic skills in an attempt to bring the final act of the drama—negotiating a supplemental concession agreement—to a fitting conclusion.

Even before Well No. 7 yielded oil in early 1938, Lenahan received hints that world affairs would affect Casoc's relations with the Saudi government. Lenahan was approached by the Jiddah manager of Petroleum Concessions, which was formed in 1936 to explore the concession in western Saudi Arabia. Although Petroleum Concessions did not find commercial quantities of oil in the allotted territory, the effort whetted its appetite for an opportunity to explore other areas of the peninsula not already allocated to Casoc under the 1933 concession. The Jiddah manager wanted to know if under the terms of the 1933 agreement—the details of which had never been made public—Casoc's preferential rights to bid for concessions in

William Lenahan relaxes at Casoc's base of operations in Jubail in 1936 before returning to Jiddah, where he represented the oil company in negotiations with the Saudi government to expand the concession area.



additional areas of the country could be canceled if the Saudi government repaid the loans extended by the oil company.

Lenahan was not under any obligation to disclose the terms of Casoc's agreement and did not think the query meant that the company's rights to explore additional areas were under imminent threat. However, the approach put the company on notice that the British and IPC, parent company of Petroleum Concessions, were not completely discouraged by their failure to find oil in the western part of the country. At the time, neither Lenahan nor the other Casoc officials seemed to appreciate the extent to which the British, concerned about the mounting threat from Nazi Germany, were operating on an accelerated timetable. In addition, unlike the negotiations for the 1933 concession, this time the British were willing to pay up.

While attempting to renegotiate its 1936 agreement to include more territory, Britain, via Petroleum Concessions, offered King 'Abd al-'Aziz an up-front bonus (as opposed to a loan against future crude oil royalties) of £100,000 and an annual rental fee of £15,000. The British wanted the new agreement to incorporate exploration rights in areas covered under neither the 1933 agreement nor the small 1936 concession agreement along the Red Sea.

The Saudi government rejected Petroleum Concession's offer. But King 'Abd al-'Aziz's advisers informed Lenahan of the bid several weeks later, thereby alerting him that it might be a good time for Casoc to consider making an offer for these unexplored areas. Lenahan and his fellow Casoc executives learned that the Saudis also were entertaining expressions of interest from other quarters.

For the following six months—from the winter of 1938 through the spring of 1939—Jiddah was the scene of intense negotiations as the Americans and British jockeyed for position with the Saudi government. The two parties were joined by a supporting cast of colorful and sometimes shady characters drawn by the allure of newfound oil. Although the Americans and British were competing for the same goal, they were doing so in as civil a manner as possible, with a good degree of mutual respect shown by Lenahan and the redoubtable Longrigg, who was once again engaged to lead the British negotiating team. The two companies even briefly considered a joint bid for rights to the Neutral Zone adjoining Kuwait. Neither the American nor the British company, however, shared such generosity of spirit toward the opportunistic newcomers in town.

Representatives of the Axis Powers attracted the most attention, and consequent suspicion. Accredited as Germany's minister to Iraq, Dr. Fritz Grobba was the ringleader of Nazi Germany's elaborate intelligence network of spies and informants working throughout the Middle East. He and his entourage flew into Jiddah in early 1939 and quickly charmed many in the foreign community. Lenahan later admitted that he found Grobba to be a likeable, "very able scoundrel." (Although Grobba never made a serious offer for a concession, he made a mark in his chosen profession. He was widely credited with fomenting the Rashid 'Ali al-Kaylani rebellion in Iraq in 1941, which briefly replaced the existing regime with a pro-Nazi government.)

Japan presented the most serious challenge to American and British interests in the region. In late March 1939, a Japanese delegation steamed into Jiddah from Egypt, ostensibly on a trade mission. Led by Masayuki Yokoyama, the Japanese minister to Egypt, the group included a geologist from the Imperial Geological Survey of Japan. Yokoyama traveled to Riyadh to make an official visit to King 'Abd al-'Aziz's court, while the geologist scheduled a meeting with Lenahan. Lenahan quickly cabled Floyd Ohliger, who was in Riyadh at the time, advising him to keep an eye on the Japanese minister and be alert to any terms the Japanese might be willing to offer for a new concession. Back in Jiddah, Lenahan was stringing the Japanese



Established in October 1933, Casoc's first office in Jiddah occupied the rambling Bait al-Baghdadi. (In Arabic, *bait* means house.) The building housed British explorer Harry St. John Bridger ('Abd Allah) Philby prior to the arrival of Casoc representative William Lenahan.



In late 1934, Lenahan moved Casoc's Jiddah office to more modern quarters near the city's Madinah Gate. The new building, which became known as the Bait al-Americani, had an interior designed to his specifications.



On May 1, 1939, a submerged pipeline delivers crude oil from Ras Tanura to the tanker *D. G. Scofield*, which is moored about one kilometer offshore. By opening Ras Tanura as a port for oil tankers, Casoc connected the vast energy resources of Saudi Arabia to the world.

geologist along, offering laborious explanations of already publicly available information about Arabian geology, while carefully withholding any proprietary knowledge gleaned by Casoc's geological teams in the field.

Ohliger, who had developed a very strong relationship with King 'Abd al-'Aziz, stayed close to the monarch and his ministers during the Japanese visit. Ohliger learned that while King 'Abd al-'Aziz thought Casoc was being too strict in its interpretation of the concession agreement's preferential rights, he was in no way warming to what one of his ministers later termed an "astronomical offer" from the Japanese. Press reports indicated that Tokyo was willing to pay roughly twice the up-front amount offered by the British for only about one-third of the territory that interested the British and Americans.

**A WORTHY OFFER** King 'Abd al-'Aziz, apparently suspicious of the territorial ambitions of the other parties, did not hide the fact that he wanted to maintain the relationship with Casoc. He also made it clear that he thought it was time for Casoc to step up and make an offer worthy of his consideration.

Weeks of negotiations ensued, including a final week spent by Lenahan in Riyadh after the King's ceremonial visit to Ras Tanura. Bishara Daoud, a Lebanese graduate of the American University of Beirut hired by Casoc to teach English and Arabic writing to Saudi employees, was enlisted as an interpreter and recalled that the negotiations took place on the rooftop in the evenings, to escape the heat. The supplemental agreement was signed by Lenahan and Finance Minister Al-Sulayman on May 31, 1939. Casoc agreed to significantly improve on the British offer, providing the government with an up-front bonus of £140,000 and an annual rental of £20,000, beginning after the first year. Casoc agreed to pay King 'Abd al-'Aziz an additional £100,000 if and when oil in commercial quantities was discovered in the new concession areas. With the newly added areas, Casoc's concession totaled about 1.1 million square kilometers, or roughly the size of present-day France, Germany and the United Kingdom combined.

Among other provisions, the agreement also called for Casoc to build a refinery and provide the government, as of July 1940, with 1.3 million gallons of gasoline and 100,000 gallons of kerosene per year. The agreement became effective July 21, 1939, the day it was published in *Umm al-Qura*.

While many in the oil company focused on the agreement for its potential to enhance oil exploration and production, much of the rest of the world viewed the deal with an eye toward its global strategic implications. In its August 7, 1939, article announcing the agreement, *The New York Times* ran a subheadline that cast the transaction in blatantly political terms: "California Standard Paying Ibn Saud \$1,500,000 and Royalties—Axis and Rivals Lose." The story stated in the third paragraph: "This vast concession granted to the American company is of the utmost political significance, especially in view of the present international situation, and goes to prove that this Arab potentate mistrusts all the European and Far Eastern Powers." The article further said that King 'Abd al-'Aziz favored striking a deal with Socal (through its subsidiary, Casoc) "because he is certain that it is a purely business proposition and that the United States has no political designs on his country."

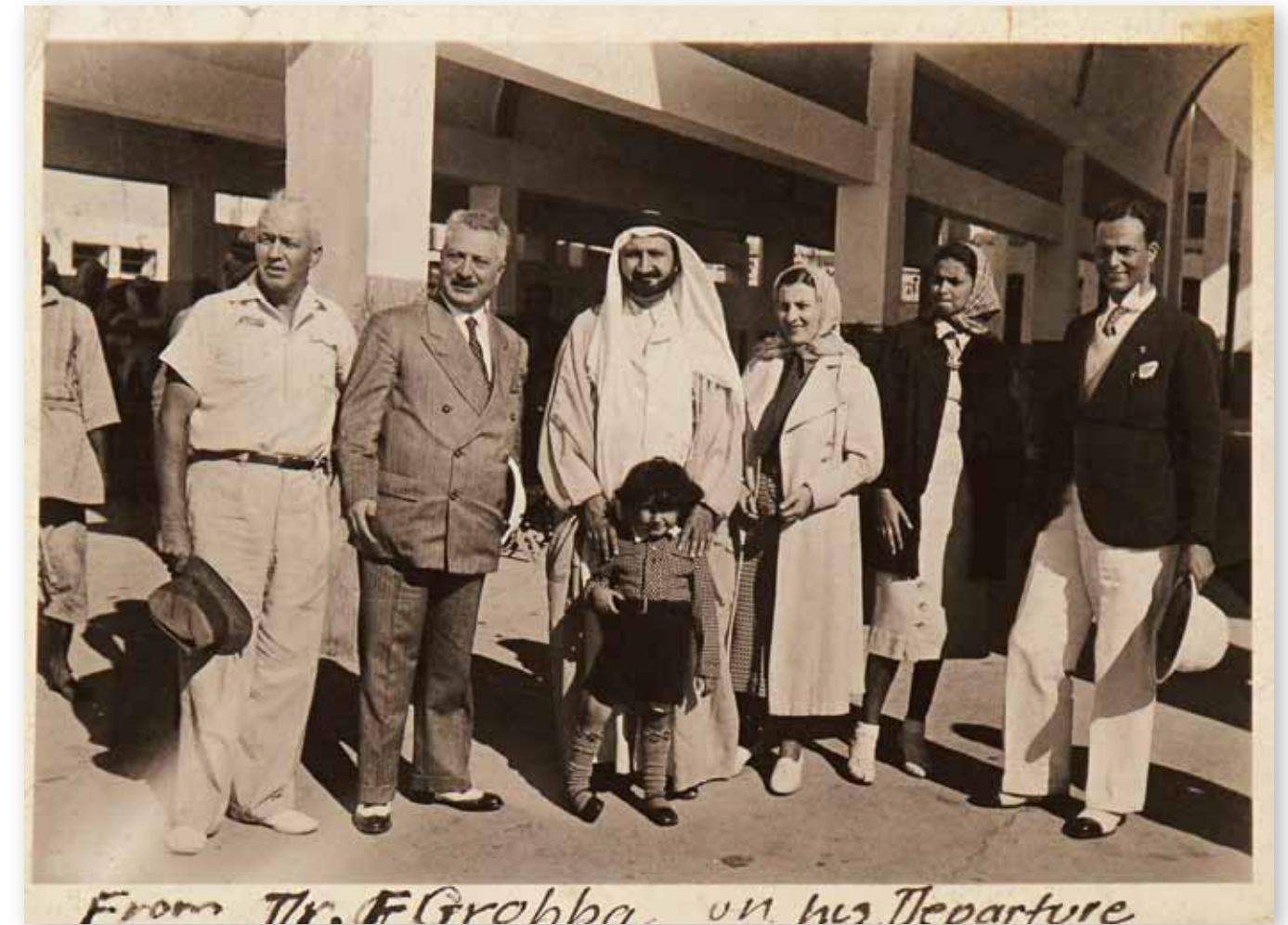
Purely business or not, the 1939 supplemental concession agreement did have diplomatic repercussions in the United States. With U.S. commercial interests likely to continue to flourish in Saudi Arabia, the U.S. government decided to give its minister to Egypt, Bert Fish, the additional title of minister to Saudi Arabia. The assignment of a non-ambassadorial official to Saudi Arabia might have been a mere half a loaf in diplomatic terms, but from Casoc's point of view it was better than none, and long overdue.

**FIRE AT WELL NO. 12** The geopolitical machinations of countries preparing for war did not make much of an impression on the American and Saudi workers in the oil field that summer. They were preoccupied by a tragic event that occurred less than two weeks before the supplemental

agreement was ratified. The employees knew that oil drilling and production was dangerous work. They were tapping reservoirs of highly flammable liquid or gas, or both, which were constantly under enormous pressure. While workers at the drilling sites had received on-the-job training in the proper use of equipment, eliminating mistakes was virtually impossible. To this day, no one knows exactly what went wrong at Well No. 12 on the afternoon of July 8, 1939.

Abdullah Yusuf Al-Anaysha was not supposed to be working at the Dammam Dome drilling site that afternoon. He had the day off, but at some point during the morning he agreed to take a friend's shift and reported to the well. On that sweltering summer afternoon, he joined the drill crew on Well No. 12, which had already been drilled down more than 1½ kilometers into the oil-rich Arab Zone initially tapped by Well No. 7 in March of that year.

In early 1939, agents of the Axis Powers crisscrossed the Middle East in an effort to secure access to crude oil to fuel the imminent war. Dr. Fritz Grobba, second from left, head of Nazi Germany's spy network in the Middle East, arrived in Jiddah in 1939, but did not make a serious effort to gain an oil concession in Saudi Arabia.



'Abd al-Latif 'Abd Allah Al-Makhaytah, who had grown up in al-Mubarraz, a village near Hofuf, had worked as a government clerk and pearl diver before joining the hundreds of young Saudi men flocking to the Casoc employment office in Dammam, looking for steady work paying three Saudi riyals a day. Al-Makhaytah went directly from the employment office to the drilling site, initially working on Well No. 14 beginning in late January 1939. Later, he was dispatched to join the crew on nearby Well No. 12. On that July 8 afternoon, he and a crew of Saudis left the rig, possibly to be replaced by Al-Anaysha and other Saudis starting their shifts.

A simple shift change occurred; it happens every day in the oil business. On this day, however, it meant a horrific death and decades of official anonymity for one worker, Al-Anaysha. For the other worker, Al-Makhaytah, it was a passing moment in the rapid transformation of the Saudi workforce.



The fire at Dammam Well No. 12 on July 8, 1939, burned so hot that the 41-meter-high derrick collapsed after roughly 10 minutes. Five men, four Saudis and one American, died in the blaze. Casoc crews, working with limited resources, improvised a solution to cut the flow of oil feeding the fire.



Paul Arnot was one of two petroleum engineers assigned to Dammam Well No. 12 that summer. He had been on the early shift, starting very early in the morning and quitting at noon to avoid the worst of the day's heat. On the afternoon of July 8, he drove a friend, Butch Wickstrom, to his job site where he worked as a carpenter in the materials handling yard behind what is now the Hamilton House guest quarters in the center of the Dhahran community. They had just walked into the yard when they heard what Arnot described as a "sharp explosion." They turned to see a massive plume of fire and smoke. The well and the 41-meter derrick near which Arnot had been working that morning had been transformed into a pillar of smoke and fire. Wickstrom had a camera with him and took three quick photos before they leapt back into their car and raced to the well site.

Even though the well was less than 800 meters away, by the time they arrived they were too late to help. Monte Hawkins, who had been walking away from the well when it exploded, risked his life to return and pull his friend Bill Eisler beyond the inferno's reach. Eisler was so severely burned, however, he died a few hours later.

Eyewitnesses reported that one of Eisler's last acts was an attempt to push to safety a Saudi worker standing on the "stabbing board" with him six meters above the derrick floor before Eisler himself jumped. The unnamed worker hit the derrick floor and didn't move.

It took 10 days, several false starts and a healthy dose of can-do ingenuity before the oilmen managed to quell the blaze. Under the inspired leadership of construction superintendent William Eltiste, they eventually fashioned a remotely operated "D" clamp, which squeezed shut the steel tube feeding oil to the fire. Starved of fuel, the fire quickly sputtered out, though the site took days to cool. King 'Abd al-'Aziz expressed his personal appreciation to the men who fought the fire.

**"BADGE NO. 124"** In 1993, Arnot wrote about the fire at Well No. 12 in *Al-Ayyam Al-Jamilah*, the magazine published for expatriate company retirees. He wanted to correct the existing public record of the fire and remind everyone that five men had died: one American and four Saudis. At the time, none of the identities of the Saudis was known. Previous accounts, including a chapter in Wallace Stegner's *Discovery!* (the well-known American author's colorful account of the early years of the oil business in Saudi Arabia), had underreported the number of Saudis who died in the explosion. One reason for this may have been the fact that their remains were not recovered until days after the fire was extinguished and the twisted metal cooled. Indeed, many Americans did not realize that more than one Saudi worker, the one who had been working alongside Eisler, had perished.

In the aftermath of the fire and a handful of other accidents, the company tightened numerous safety procedures. The goal was to dramatically lessen the odds of another such tragedy—a goal fervently shared by the government. Finance Minister Al-Sulayman cabled the Casoc camp, saying he hoped the tragic well fire would be the last of its kind. The loss of life among the Saudi workforce in this case and others played a role over time in shaping the Saudi government's approach to workman's compensation and other related issues.

Compensation takes many forms. The stories of thousands of Saudi workers who joined the oil company in its early years are little known beyond the realm of their immediate families. Casoc records for most of these men include the bare facts: ages (although it was common for Bedouins and villagers of that generation not to know their exact birthdates), dates of employment, job classification and employee numbers. The story of Abdullah Yusuf Al-Anaysha, Casoc Badge No. 124, might have been similarly lost to history, if not for his son. The other three Saudis who perished with Al-Anaysha that day remain unidentified.

Ibrahim Al-Anaysha never knew his father but followed in his footsteps, much to his mother's initial dismay, by joining the oil company in 1951 at the age of 13. Ibrahim and a friend were skipping school one afternoon and happened to walk past the company's recruiting office in Dammam. They walked in on a whim, and a recruiter, speaking Arabic, asked them if they knew English. They said yes and started counting "one, two, three" in English. The recruiter hired them to start as office boys who could continue their education on the job. Three days later, they were working for Aramco, as the company was known starting in 1944.

By 1962, Ibrahim had become a claims examiner in, ironically, the company's safety department. He found his father's file. There were a few reports of minor scrapes being treated. The file also contained a receipt the company had received from an office of the regional government, confirming that Casoc had paid the government 5,000 riyals in compensation for the family's loss. The problem was, however, that his family had received only 1,000 riyals in 1939. Ibrahim petitioned the government, providing the receipt as evidence, and within seven months the government paid the remaining 4,000 riyals.

What became of the Saudi worker whose shift change most likely spared him a fiery death on July 8? 'Abd al-Latif 'Abd Allah Al-Makhaytah was a rising star, as well as something of an inspiration. His good fortune in avoiding disaster on the Dammam Dome led him the following year to the Abqaiq field, where he helped drill the discovery well for that field. From there, Al-Makhaytah received training from his American foremen and others over the next decade, acquiring skills that allowed him to advance into progressively more senior jobs with greater authority, so that by 1952 he became one of the first four Saudis trained as a rotary driller.

Activity in the oil fields fell dramatically during World War II as the global conflict disrupted shipments and the Axis Powers threatened to overrun Gulf oil-producing areas. Around the time this panoramic view of Dhahran was taken in 1942, Casoc's workforce had shrunk to 1,600 Saudis, 82 Americans and 84 other foreign employees.

## Western Wear



A proud Saudi driller takes a break for a photo in 1936, surrounded by drilling mud porters. By the second half of the 1930s, first-generation Saudi workers began to move rapidly into semi-skilled labor positions that rewarded ingenuity but did not require a formal education.

The company's early years coincided with a period of great change for Saudi Arabia as King 'Abd al-'Aziz sought to modernize his country while still keeping it anchored to traditional roots. Future Aramco President Tom Barger remarked in his first days in Arabia how newly imported Western goods mixed with native styles to produce "many incongruities: Arab robe and headdress over a business suit and shoes, soldiers dressed in Boy Scout shorts and Arab headscarves." Like the other field geologists in the 1930s, Barger himself often wore a *ghutra*, a headdress formed from a folded scarf, over his Western clothes both for its practical uses in desert conditions and as a gesture of respect to Arab hosts.

By the 1950s, however, Aramco had begun requiring even its Saudi employees, especially those working in field or industrial jobs, to don Western wear, including hard hats and workshoes, for practical and safety reasons. Mohammed Saeed Salman Al-Ali, who went on to have a distinguished 45-year career with Aramco, recalled being assigned a uniform when he started work as an office boy. The white shirt and trousers made Aramco employees stand out among their friends and neighbors, many of whom still wore the traditional *ghutra* and ankle-length, shirt-like *thawb*. Some Saudi workers, reluctant to be publicly seen wearing foreign garb, compromised by wearing white *thawbs* tucked into their pants while at work in imitation of Western style. They could then pull the long garments free to cover their pants once they left the office.

Today, Western clothing is more widespread mainly in technical and industrial facilities, particularly since the flowing fabrics of traditional clothing can be hazardous around modern machinery, but ancestral styles can still be widely seen throughout Saudi Arabia.

**A BEND IN THE WADI** In January 1940, Barger had been present at one of the seminal moments in the history of oil exploration in Saudi Arabia. After taking a break in Dhahran to celebrate Christmas and New Year's Eve 1939, two geological teams were back out about 320 kilometers southwest of Dhahran. The topographical feature that separated their areas of exploration into northern and southern portions was a dried riverbed known as Wadi al-Sahba. The *wadi* was formed by an ancient river that had flowed from the central plateau near Riyadh to the Arabian Gulf more than 6,000 years earlier. Barger and another geologist, John "Johnny" Thomas—who entertained the Bedouin guides and soldiers with his accordion around the campfire at night—worked the northern area, while two other geologists, Ernie Berg and Watson Grumm, covered the southern portion.

The following day, Barger and Thomas met at a prearranged location with the other two geologists to await the arrival of their boss, Max Steineke. Barger and Thomas had not found much of interest in the desolate region, but they were intrigued by Berg's attempt to explain a local oddity in the path traced by Wadi al-Sahba that they had noticed earlier in the 1939–1940 season. Describing the conversation years later, Barger recalled:

We concentrated on our discussion with Ernie about Wadi [al-Sahba], which was the boundary between our work and theirs. The *wadi* originated far in the interior on the back slope of the Tuwaiq Mountains, and for most of its length, it traveled due east in almost a straight line. However, in the vicinity of Haradh, the *wadi* bent south for a fair distance and then bent again and went east to eventually disappear in the low lands to the southwest of Qatar.

The surface gave no clue to any particular reasons to why the *wadi* should make this southward bend. We had discussed this with Ernie earlier in [1939], and now he was investigating this bend on his own, as his partner wasn't interested and occupied himself mapping other areas in their territory.

There were many small *jabals* around Haradh with flat tops on them. ... They were capped with a sandy limestone that seemed to be involved in much slumping, as the caps of the hills were not horizontal, but dipped in various directions that did not appear to fit any kind of pattern. Ernie thought that perhaps there might be some significance to the way in which these buttes dipped, so he meticulously had mapped a great many of them in the Haradh area.

He then measured the slope and the direction of the slope of these *jabals*. As they were put on the map, it revealed that the tops of the *jabals* in general, with a few exceptions, sloped away from the center, which was near [Haradh], in a pattern that indicated an uplift that could account for the change in direction of Wadi [al-] Sahba.

Since a structural uplift like this is a prime indicator of an oil reservoir, Johnny and I were excited by Ernie's discovery and couldn't wait to see Max's reaction. Max arrived the next afternoon, and the first thing he did was pull out the maps. When he saw Ernie's map of these arrows all pointing away from the center near [Haradh], he became as excited as we had been. ...

This was the first discovery of a structural uplift on what later became known as the Ghawar Field, probably the largest single oil field on earth. Its structural significance was confirmed a few months later when Max and Ernie went back to Haradh and found Eocene rock outcroppings at the center from which Ernie's arrows radiated.

Intrigued by an inexplicable bend in the dried riverbed Wadi al-Sahba, geologist Ernie Berg in January 1940 measured the slope and direction of nearby flat-topped *jabals*. His map suggested that a structural uplift, a prime indicator of an oil reservoir, caused the *jabals* to tilt and the *wadi* to bend. Further prospecting revealed that he had discovered the southern reaches of what became known as the Ghawar field, the largest oil field on Earth.



**TRACKING THE GIANT** Later, in 1941, a structural drilling team was working its way south on the 217-kilometer-long Ghawar structure, then known as the En Nala anticline, ending up relatively close to the area where Berg had his flash of intuition. As paleontologist Nestor John Sander recalled, “We had a pattern of wells, and we kept going south and farther south and farther south and the structure kept rising and rising, slowly, but rising all the time. ... As we went south all of the beds [of sedimentary rock] thinned, more or less by the same amounts. I finally got sited and drilled S-107 [Structural Well 107], on the east side of the En Nala anticline near [Haradh], right next to it practically.”

### “A Good Place to Make a Future”

Casoc was willing to sign the supplemental agreement in 1939 based on the productive potential of the Dammam Dome oil field. Indeed, according to *The New York Times*, the estimated Saudi crude oil added to its existing holdings ranked its parent, Socal, as having “among the five largest holdings of crude petroleum resources in the world.” However, it was the discoveries of the next several months—although overshadowed by the rapidly developing world war that began with Germany’s September 1 invasion of Poland—that catapulted Casoc into the front ranks of global industry leaders.

In fact, the oil field discoveries gathered momentum so quickly that their true significance initially resonated only with those experts in the field most attuned to reading the rocks. One who continued to distinguish himself during this period was Tom Barger. As early as March 1940, there was no question in the young geologist’s mind that the oilmen had hit it big in Saudi Arabia. As the future oil company CEO wrote in a March 3, 1940, letter home to his wife, Kathleen, “This is going to be a great oil company and a good place to make a future.”



Geologist Tom Barger, left, impressed managers with his Arabic language and leadership skills and eventually rose to serve as Aramco CEO during much of the 1960s. Fellow geologist Ernie Berg, whom Barger credited with the Ghawar discovery, is on the right.

Steineke and paleontologist Richard Bramkamp walked up to the drilling site with some fossil samples. Sander identified them as indicators of what they called the “Chalky Zone,” a layer that at one of the wells farther north had been 243 meters deep. Sander’s identification was correct, but Bramkamp pointed out that the layer was no longer buried: “I took that from an outcrop, up on top.” That meant that the older sedimentary beds were finally rising to the surface, which was good news, because it indicated that a structural trap or closure had likely formed below ground that would create conditions in which oil and gas could be trapped by the rock layer. The next well to the south, S-108, confirmed that the surface was declining from the earlier well site, even if only by 10 to 12 meters. In addition, the well revealed that the subterranean layers were thickening once again, suggesting that the drilling party was heading back down the side of a structure buried deep beneath them. That night, Sander sent a coded message by radiotelephone, in case Casoc’s British oil industry rivals across the Gulf were listening, telling Steineke and Bramkamp that the drill team had found a downward-sloping trend, creating an underground trap that might contain oil and gas.

Despite these tantalizing clues, the geologists’ attention over the next few months shifted from the remote area that became known as the Ghawar field to other areas that were closer to Dhahran and more extensively developed. Steineke had been intrigued by the Ghawar area for years, but more pressing oil company issues, and then World War II,



intervened before any extensive work was done there. Even though the geologists claimed they could practically smell the oil buried beneath the structural uplift at Ghawar, the field was not developed until 1948. In fact, its full potential was not appreciated by geologists and drillers until several years after that.

**ABU HADRIYA TO ABQAIQ** Hard work, perseverance and a little bit of luck resulted in additional significant discoveries elsewhere in the region. Drilling began in 1939 at the site for the Abu Hadriya discovery well 161 kilometers northwest of Dhahran. The company was flush with confidence following the discovery of oil in the Arab Zone at Well No. 7 on the Dammam Dome. But as the drilling team reached the depth where Well No. 7 struck oil, the Abu Hadriya well was still not producing oil in commercial quantities, and the drillers worried that maybe this time they were not going to be so lucky.

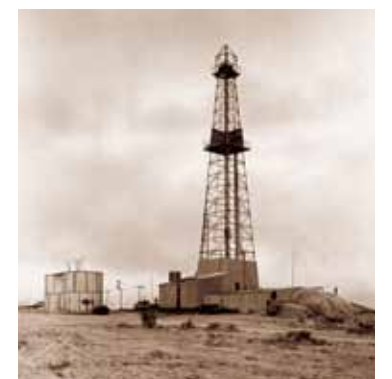
Drilling at Abu Hadriya continued into early 1940. The drill bit reached a depth of three kilometers—extremely deep compared with wells drilled in oil fields in most parts of the world at the time and more than twice the depth of Well No. 7. Yet no oil was found. As with Well No. 7, Casoc executives in Saudi Arabia and San Francisco, in particular, were going through the kind of cost-benefit analysis applied to many such ventures. Was it worth drilling deeper? Should they cut their losses and move on? After all, there were plenty of areas yet to be drilled.

Sander was one of the geologists assigned to the Abu Hadriya well. As he recalled, “We made a test and there was no oil, but very salty, extremely salty water instead. ... Then headquarters said, ‘Well, it’s over, shut her down.’”

“But the driller had these stands of pipe made up. You know, pipe comes in 30-foot lengths, and three of them are screwed together to make a stand, as they call it. Well, he had six stands left. That’s six times 90 feet; that’s 540 feet. He shut off the radio and said, ‘I’m going to use up these stands.’ Before he was done, they struck oil at Abu Hadriya.”

Barger, in a letter dated March 3, put the find at Abu Hadriya in the context of the broader exploration effort in Saudi Arabia: “The oil at Abu Hadriya means a great deal, as we have several similar structures for which we can now expect a 50-50 chance of getting oil. Before this, we had no idea of their significance as possible oil producers. Now the company will start drilling

While drilling continued on the Dammam Dome, Chief Geologist Max Steineke led teams to study an apparent uplift in the Abqaiq area. Steineke, J. W. “Soak” Hoover and Jerry Harriss used this camp as their base of operations in 1936. Abqaiq Well No. 1 hit oil in early 1941, with flow rates indicating a major new oil field.



A drilling crew at Abu Hadriya, 161 kilometers northwest of Dhahran, struck commercial quantities of oil in 1939 at about 3,050 meters, more than twice the depth of Dammam Well No. 7.

Mistaking Dhahran's brightly burning gas flares for those at the refinery on nearby Bahrain, an Italian war plane bombed the community and surrounding production facilities on the night of October 19, 1940. Damage to Dhahran, which included several bomb craters, such as the one seen here, and a few severed oil and water lines, was minimal.



another structure at a place called Abqaiq, halfway between Dhahran and Hofuf, on the edge of a great belt of sand dunes. Max has been all his life looking for a place like this, and now he'll soon find out if he's right."

Even before the discovery at Abu Hadriya, Abqaiq was attracting an increasing amount of attention from the oilmen in the areas of production as well as exploration. When Max Steineke took Fred Davies snaking through the dunes covering the Abqaiq field in 1936, he showed Davies the outcropping of Eocene stone and the apparent structural uplift. The area was one of many regions deserving of additional study and already one of Steineke's favorites. Of course, Steineke was always in favor of gathering more evidence whenever possible. Structural wells drilled as deep as 760 meters in the late 1930s confirmed Steineke's visual observation that there was a structural uplift beneath the dunes, as did seismic testing. Initially using dynamite, geologists sent seismic shock waves pulsing through the rock strata and then analyzed the waves' reflections off of various layers to determine if they created a pattern suggesting that oil might be trapped in structures far beneath their feet.

By the time of the Abu Hadriya discovery in March 1940, Abqaiq had risen to the top of nearly everyone's list of likely oil-bearing areas. Its relatively close proximity to Dhahran compared with Abu Hadriya or Ghawar made Abqaiq a prime candidate for drilling in August 1940. Despite the blistering summer heat, work at Abqaiq Well No. 1 began.

**TOO CLOSE FOR COMFORT** By the middle of October 1940, the worst of the seasonal heat was past, and work was progressing on the discovery well at Abqaiq and at a second well that had been started at Abu Hadriya. The night of October 19 was clear and balmy. Stars filled the sky, at least in that portion where they were not outshone by the bright moon. It was hard for anyone in Dhahran to imagine on such a tranquil and beautiful night what people in Europe must have been going through in the middle of a war. The oilmen, however, were about to get a taste.

William Burleigh and William Palmer were admiring the nocturnal display from the upper floor of the community clubhouse after most of the other oilmen and their wives had turned in for the night. A droning sound grew progressively louder, and they suddenly realized

## False Alarm

Saudi entrepreneur 'Abd Allah Fouad's career demonstrates there is virtually no limit to what determined people can accomplish. With support from Aramco in the immediate postwar years, Fouad, who hails from one of the most prominent families of al-Hasa and whose immediate family was among the original settlers in Dammam, rose to become one of the most successful businessmen in the Eastern Province. Fouad, generous in supporting charitable causes in the region as well as advising the next generation of entrepreneurs, cautions young Saudis that their route to success is unlikely to follow a straight line. As he is fond of telling listeners, his career path certainly did not.

As a young boy, Fouad picked up enough English from private lessons offered by the wife of an oil company worker to be hired for the office-boy corps at the camp in 1940. After about five months, he was offered an opportunity to work as a telephone operator and manned the camp exchange on the night shift with two other boys who also spoke some English. They worked in two-hour shifts in what was still called the radio shack, sleeping on the floor of the back room until it was their shift again.

After the October 1940 bombing, camp residents took several steps in anticipation of another bombing aimed at their facility. Among the most crucial preparations was the attachment of Venturi air-injection systems, which made the flares (an integral part of production facilities that enabled them to burn off natural gas they could not use or store) burn blue rather than yellowish orange. Camp electricians also installed an early warning system of sirens to alert residents in the event of another bombing raid.

The button triggering the alarm system was installed on the corner of the telephone operator's console. The idea was that someone would call the operator if he sighted an incoming bomber, and the operator would trigger the siren while phoning officials with emergency responsibilities. At least, that was the idea.

Fouad by this time had such a good command of English that he spent his spare time reading English detective fiction that had been passed along by the Americans. One evening early in his tenure at Casoc, Fouad was on the 2 a.m. graveyard shift. The plot of the particular "whodunit" he was reading that night was apparently not gripping enough to overcome his fatigue, and he slowly drifted off to sleep.



The next thing he knew, his manager was looming over him, demanding to know what he was doing. They both soon realized that in his sleep, Fouad's elbow had slipped onto the siren button. The radio shack was far enough away from the nearest siren, however, that he had not heard the alarm. Several residents had already decamped for the desert in their pickup trucks or taken refuge in the sand-bagged air raid shelters. All three boys on duty that night were fired when their shift was over at 7 a.m. It was not the end of Fouad's relationship with Saudi Aramco, however, as he later set up a successful contracting business supporting the oil industry in the Eastern Province, among many other activities.



After an Italian war plane mistakenly bombed Dhahran in October 1940, Casoc built 25 air raid shelters in Dhahran and Ras Tanura. The shelters, such as this one in Dhahran, featured roofs of steel plate over layers of sandbags.

Facilities such as the Dhahran hospital were protected by sandbags during the war years. Casoc also built heavy masonry walls around key installations in Dhahran and the main refining area of Ras Tanura Refinery.

that a plane was bearing down on the camp—a very rare if not unprecedented occurrence at night. Almost as soon as they recognized that the sound was a plane, several explosions reverberated from near the *jabals* on the Dammam Dome. As incredible as it seemed, they were being bombed.

The two men pounded down the clubhouse stairs and into the street, where they were met by other dazed colleagues and their wives who had rushed out of their small houses lining the streets and now stood in the night staring up at the sky, looking for some sort of explanation. Burleigh and Palmer ran to the nearby powerhouse so they could throw the switch that would plunge the camp into darkness and hopefully make it a less inviting target. The plane circled a few times more and then flew off into the night.

Sunrise the following morning revealed that the damage had been slight and that no one had been injured. Between two and three dozen 27-kilogram bombs had been dropped on Dhahran, but the only damage was to a small oil line and a water main, both of which were quickly repaired. Other planes bombed the vicinity of the refinery in Bahrain, though again there were no casualties and damage was slight.

Shortly after the raid, Dhahran residents learned that the plane was Italian. The news was disclosed by none other than Italy's fascist leader, Benito Mussolini, who broadcast a public apology to King 'Abd al-'Aziz over the radio, saying that four of the bombers had been planning to hit the Bapco refinery in Bahrain, where British naval ships refueled. One pilot evidently veered off course while flying over the mountains of Lebanon, and on seeing the lights of Dhahran and its facilities, assumed it to be the refinery in Bahrain. Apparently the Italians had been told to target the bright orange waste gas flares, without realizing that the flares had been moved farther away from the installations on Bahrain and in Dhahran only days before.

The incident left its mark on the people in Dhahran, Saudis and Americans alike. The famous local poet Sa'ud ibn 'Abd al-'Aziz Al-Zayd—more commonly known as Sa'ud Al-Kuwaiti—wrote a poem in colloquial Bedouin Arabic, recording the bombing and describing the residents' feelings of fear and anxiety.

Ivan Wilson, John Domercq and George Sutherlen, left to right, enjoy a lighthearted moment in Dhahran in 1939. The camaraderie enjoyed among the oilmen served them well as they became increasingly isolated and cut off from the rest of the world during the war years.



**“THE HUNDRED MEN”** After the bombing, Casoc began to scale back operations almost immediately. By the end of 1940, the number of Americans in the company community had been cut in half to 226, with most women and children among the evacuees. Following an attack by Axis-inspired Iraqis on a British air base in Iraq, operations were scaled back again, and in May 1941 the last of the wives left their husbands in Saudi Arabia and sailed for the United States. There were now fewer than 100 Americans left. As Chief Petroleum Engineer Philip McConnell, who later wrote a book, *The Hundred Men*, covering the period, said, “The time of the ‘hundred men’ had begun.”

## Desert Classic

Despite the wartime pressures, Casoc employees still found time for leisure activities including tennis on lighted courts and golf. Writing to friends in the United States in July 1942, even as British and German tank divisions were maneuvering in the desert west of Cairo, Chief Petroleum Engineer Philip McConnell described how golf was played in Dhahran by expatriates and some Saudis:

Midway between camp and the seashore lies a barren blazing waste, distinguished from other barren blazing wastes by a faint hint of soil caught in a great depression among the brown mushroom hills and sheltered there from the claws of the shemaal. ... It is within this garden spot that our golf course has been spread, a course consisting of nine tees, stakes to mark the limits of the otherwise undistinguishable fairways, nine oil-sanded greens and a great amount of otherwise idle desert. Occasionally, a herd of camels ambles over our greens, leaving deep pits in the carefully smoothed sand; or a pair of donkeys may patter across, distributing smaller but sharper pockets for the trapping of a perfect approach shot. The terms “fairway” and “rough” imply a distinction that is theoretical only. Fairways lie between two rows of stakes but possess nearly the same number of rocky outcrops, sand dunes and gravel banks as the rough. However, we meet that emergency promptly by creating local ground rules that permit the use of artificial tees for all shots except putts—and that means from even two feet off the green. ... And remember, this is our new course. We grew discouraged with the one farther south. Now we play on what undoubtedly is only the second worst golf course in the world.



In the years after World War II, many employees found time to play a relaxing round of golf. Oiled sand passed for greens at the Dhahran course, and fairways were mostly a figure of speech.

Casoc's parent companies could no longer operate as if World War II was strictly a European concern. Plans that had been under way early in 1940 to increase production dramatically were postponed. However, not every drill bit was put on the shelf or every pump turned off. Although drilling had been suspended on the second well at Abu Hadriya following the bombing, work continued at Abqaiq Well No. 1 throughout the fall and winter of 1940 and 1941. Paul Arnot, who worked on the project, years later described the work at Abqaiq undertaken by the American and Saudi workers. Despite some discouraging results at shallower depths, the drillers persisted, penetrating through layer after layer until they found “a good quality oil in a thick reservoir section ... highly encouraging.”

Oil had surged from nearly 1½ kilometers below ground to the surface in just three minutes—an early and impressive indication of Abqaiq field's potential. The associated gas escaping with the oil was directed away from the derrick through a pipe and then intentionally ignited to avoid the possibility that the poisonous hydrogen sulfide it contained might reach anyone in the area. After the well was cleared of drilling mud, a valve was cranked shut and the flow of oil choked off so Casoc could continue exploration work.



The first company school for Saudis opened in May 1940 in one rented room of an al-Khobar house. Casoc employee Hijji bin Jassim, who owned the house, also served as the school's first instructor.



Men and boys eager to learn pose in front of the Saudi Camp School, which opened in July 1940 in a *barasti*. Early training focused on specific job skills, but as the 1940s progressed, the company significantly increased its efforts to provide broader educational opportunities.



The Abqaiq discovery well indicated that Casoc had a major find on its hands. Oil was flowing at a substantially greater rate than on the Dammam Dome. Casoc Director James Terry Duce wrote that “the drill-stem test ... indicated that the well was flowing at the rate of 405 barrels an hour or 9,720 barrels per day. ... These are of course only drill-stem tests and merely indicative that we have a big well ... with the possibility of a big new field.”

Several months after the discovery well at Abqaiq had been temporarily capped, drilling started on a second well in the field. A third was spudded several months later. Although starting new wells may have seemed inconsistent with plugging the first one, there was some logic to the decision. During wartime, Casoc may not have had the resources to develop production at Well No. 1, but it did have the drilling equipment to continue exploring the field for a relatively small incremental expense compared with the cost of outright production. The concession agreement also required Casoc to have two rigs in operation, though it is possible the company could have asked to have that provision temporarily waived in light of the war.

Well No. 2 was completed in 1942 and the third Abqaiq well in January 1943. Both ultimately confirmed that Casoc was indeed sitting atop one of the largest oil fields discovered at the time. As Arnot recalled, “If Aramco had not found anything larger than the Dammam field, it would have been a very small company. Oil had been found at Abu Hadriya, but the oil-producing potential did not appear encouraging. The three Abqaiq wells provided sufficient proven reserves to make Aramco potentially a great oil company.”

As war fears worsened in Dhahran, Casoc eventually sealed 10 of the 16 wells on the Dammam Dome and closed both the Dhahran stabilizer plant and the small refinery in Ras Tanura. The Americans communicated closely with British oil experts in the Gulf concerning the best way to disable oil-producing equipment to prevent the Germans from being able to utilize the crude should their advance across North Africa continue to Dhahran. Exploration teams were recalled from the field, though not before eyeing potential escape routes southward through the vast Rub’ al-Khali to the British-protected port at Aden at the southwestern tip of the peninsula. Trucks were kept on 24-hour alert in case they needed to make the run on short notice. At its low point in 1942, the workforce in Dhahran was reduced to 82 Americans, 84 other foreign employees and about 1,600 Saudis. Despite the war footing, Dhahran was still able to ship from 12,000 to 15,000 barrels of oil a day by barge to the refinery in Bahrain to help fuel Britain’s Royal Navy.

**EDUCATING THE NEXT GENERATION** Once oil in commercial quantities had been discovered, it was clear that Casoc was in the country to stay. With this partnership between the American oil company and Saudi leadership firmly established, Casoc could now begin to embark on projects beyond the immediate requirements of the agreement. Reflecting the King’s original vision, Casoc and the government began to explore ways in which the country’s expanding oil industry could directly improve the lives of the Saudi people. To this end, the company launched a project to provide additional educational opportunities for Saudis.

The first school opened on May 11, 1940, in al-Khobar in a room rented from one of the company’s previously educated employees, Hijji bin Jassim. He served as the al-Khobar school’s first instructor as well as its landlord. The school was open to employees and non-employees living in the small town who demonstrated some proficiency in English, and 19 men and boys enrolled the first night. Supplies were provided by the company. The program quickly expanded to 50 students, and another employee-instructor—Hamzah Saleh—was added. New, larger quarters were built in the *barasti* style next to the government wireless station in town so the school could use the station’s power source to run its electric lights.

### Educating Girls

Government-provided girls education in Saudi Arabia did not occur until the early 1960s. But girls were being taught in informal classes in homes scattered throughout the al-Hasa region. One such school operated for several years in the al-Khobar family home of the mother of future Saudi Aramco President and CEO Abdallah S. Jum’ah.

Young boys and girls attended classes taught by Jum’ah’s mother, who had memorized the Quran in her youth. The teacher and students moved their classroom from room to room in the *barasti*-style home to remain in the shade throughout the day. This was not a practice targeting the wealthy by any means, Jum’ah recalled. “These were very simple people, very poor people, but they knew the importance of education and they wanted a better life for their children.”



Beginning in the early 1960s, government-run schools for girls started operating, gradually replacing the informal method of “homeschooling” in which generations of girls had been tutored in private homes.

## Feeding the Nation

By 1943, Saudis were suffering from mounting war-related shortages of foodstuffs and other basic commodities, even though the country was officially neutral. Japanese advances in Southeast Asia had sharply curtailed shipments of rice to the Gulf region. German U-boat attacks seriously restricted goods arriving from the West. The Saudi desert did not lend itself to planting Victory Gardens, as was common in Europe and the United States. Therefore, the people turned to their sovereign for help. Philip McConnell chronicled the ravaging effects of wartime inflation on the Saudis:

The cost of such food as was available was skyrocketing. In the period from 1939 to early 1943, the price of basic items of Saudi diet quadrupled, and most of that increase occurred in 1942. A sack of sugar that sold for thirty-four rupees in 1939 could be purchased for one hundred forty in January 1943. The cost of a sack of rice rose from seventeen rupees to seventy-five; a sack of flour from fifteen to seventy-five. Four pounds of fish, although locally procured, merely tripled from four rupees to twelve. ...



The Murabba' Palace rises above the mud-brick walls of Riyadh in this 1945 photograph. Wartime deprivations and rampant inflation led thousands of Bedouins to turn to their King for help. In the capital city, they received staples that were distributed free of charge to those in need.

Faced with this situation, the nomads of the desert moved their livestock, their tents, and their families to the outskirts of the capital city, where they called on the King to feed them. ... When the black tents of the Bedouin began to dot the desert around the palace on the outskirts of Riyadh and the people called for food, he listened. In 1943, the tents blossomed freely, and the calls of both townsmen and nomads grew.

The King took such action as was available to him, limited as he was by both lack of money and food sources. India released some rice; wheat was found in far-off Australia. Presumably with the assistance of the British government, ships were made available to carry the grain to Saudi Arabia.

To move education closer to its employees, Casoc opened another school in July 1940 in a *barasti* built for the purpose at the site where most Saudi workers lived in Dhahran, called Saudi Camp. It tapped Syrian-born and -educated employee Mohamed Aridi to be the instructor. The school was open to employees and non-employees alike. Classes were held after working hours. Eighty-five students showed up the first night, and in a short period of time that figure nearly doubled to 165.

The best known of the early schools was the Jabal School, which opened in 1941 in its first location, a *barasti* in the Saudi camp. The school's purpose was to provide educational opportunities to "Houseboys, Waiters, and Telephone Operators who were unable to attend the regular schools due to their working schedule. Special classes were started also for Office Boys, who, due to their age and the necessity of retiring at an early hour, could not attend the regular classes," noted Jack G. Hosmer, who supervised the schools. Ja'far ibn Muhammad was hired to teach the special classes and assist in the Saudi Camp School. Within a few months, more than 110 Saudi boys were enrolled in the classes at the Jabal School. Lessons in English, Arabic and mathematics dominated the initial curriculum. In April 1944, the Jabal School moved to a new location in a coral-rock and plaster building that had been built as a bunkhouse in the mid-1930s as part of the original Dhahran camp.

**SCRAPING BY** In 1942 and 1943, the oilmen were running short of almost everything. Desperately needed supplies either were not available for civilian use or were lost at sea on the cargo ships that fell prey to Axis torpedoes.

By early 1944, supplies for the newly named Aramco (see "A New Name," p. 118) had dwindled to almost nothing. The company's fleet of trucks was down to its last 30 spare tires. The machine shop worked desperately to keep engines of all sorts running—even those with cracked cylinder heads. There were not enough boilers to go around, and the company was out of fire bricks to repair the boilers it had. Memoranda were written on the back of old office forms and even on flattened paper cups. An appropriate use was even found for the starchy Australian toilet paper detested throughout the camp—the rolls were cut to fit the adding machines, and they performed flawlessly.

The company relied upon the ingenuity of its employees to maintain and repair the limited equipment available using whatever materials were available at hand. Battered drilling rigs were pressed into extended service by recovering drill pipes. Broken axles were welded and the trucks returned to service. One determined Saudi employee reportedly repaired an aging company tractor using nothing but a poultice of mashed dates and a bandage of rags.

Fresh vegetables and meat were increasingly scarce. The intrepid workers' response was to create their own Victory Garden (dubbed "Sewage Acres") and an "Animal Farm," both under the direction of commissary chief Steve Furman. The runoff from the camp's sewage disposal plant had created a patch of green weeds downhill from the facility for some time, so it was no great leap of imagination to realize that they had a ready source of fertilizer. Camp doctor T. C. Alexander stepped in to monitor the operation to keep the risk of contamination to a minimum.

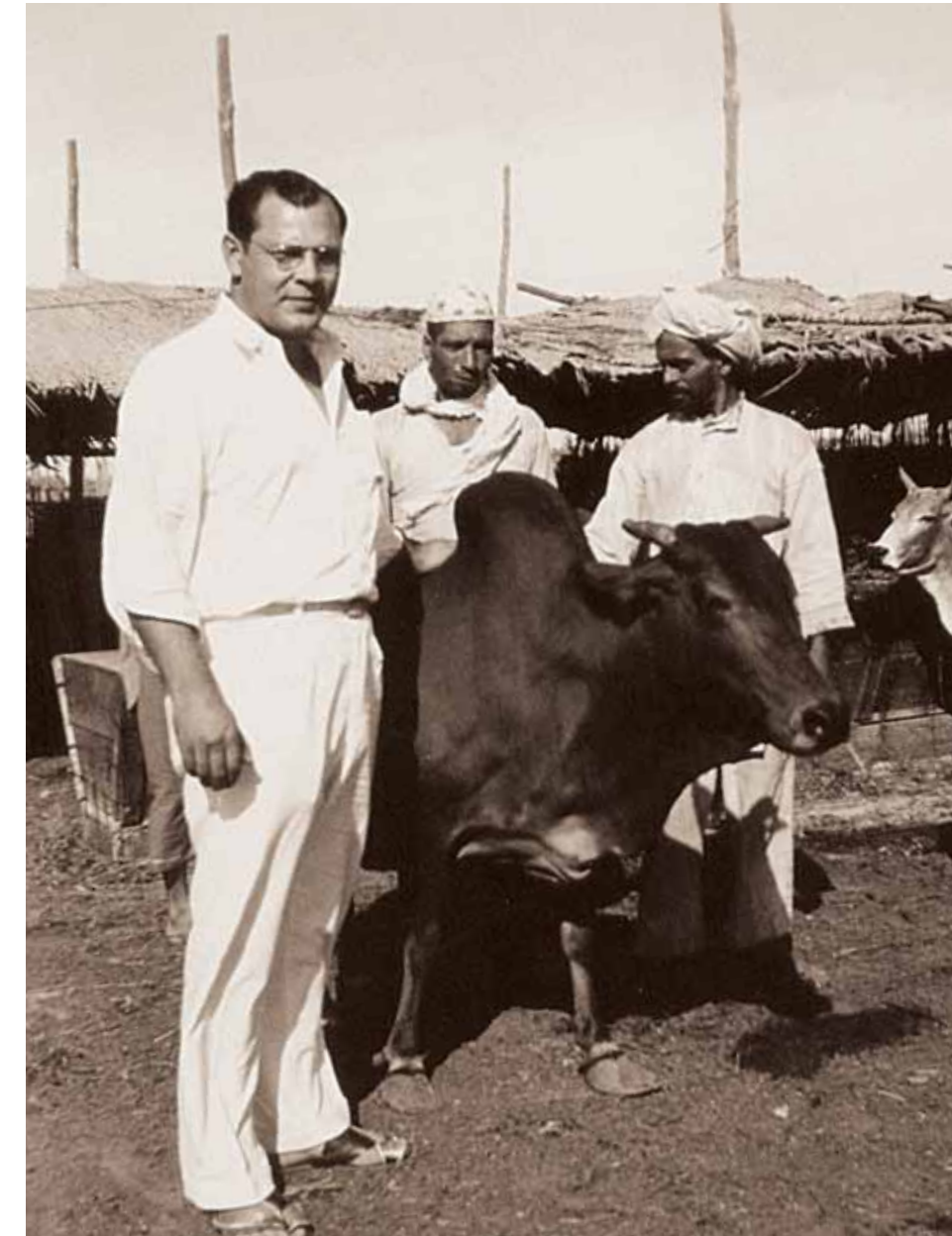
Furman's animal husbandry was a welcome relief to the Americans in camp and an eye-opener to the local Saudi farmers. Having never seen an incubator, they refused to believe, until Furman demonstrated the process, that chicken eggs would hatch after sitting for 21 days in a warm box. He also brought in and raised rabbits, pigeons, cattle, sheep, goats and camels, using selective breeding to improve his subsequent stock in the process. He even contracted with an elderly Bedouin named Mutlaq to drive cattle more than 1,600 kilometers from Yemen north and then east across the desert to Hofuf and then Dhahran. On the final leg of a drive in 1944, Aramco employees working on a company-sponsored agricultural project near al-Kharj ended up trucking what was left of the drought-devastated herd to Dhahran. By the end of the war, Furman had a flock of more than 5,000 sheep on the range near Dhahran and 1,200 head of beef and dairy cattle being fed at the camp farm.



Civilian energy conservation measures were in effect in the summer of 1941, months before the United States entered World War II, reflecting the government's concerns about limited foreign supplies of oil and the need to stockpile domestic reserves.

**SERVING THE PACIFIC THEATER** With the outlook for the war improving in Europe, the U.S. government's attention by 1944 was increasingly focused on the Pacific theater of operations where U.S. troops were engaged in fierce battles with Japanese forces. The small group of American oilmen left in Dhahran learned that scarce steel and other key materials, as well as barges and ships, were being redirected to the Ras Tanura sand spit where Casoc had built its 3,000-bpd refinery in 1940. The U.S. government needed the company, now named Aramco, to build a much larger 50,000-bpd refinery at Ras Tanura to supply fuel for the U.S. Navy. The oil company brought in Bechtel-McCone-Parsons, a contractor known for handling such large-scale projects, to construct the refinery.

In addition, with the era of the "Hundred Men" behind it, Aramco needed to increase its workforce. The company estimated that as many as 1,400 men were needed for the mammoth expansion effort. The problem was that the new men—some resorting to sleeping on the beach at Ras Tanura for lack of adequate housing and facing substandard facilities nearly everywhere they turned—were tiring of conditions in Saudi Arabia. Their present miserable and their future bleak, they started heading back to the United States in alarming numbers. As many as 250 men had made the return trip by late September 1944.

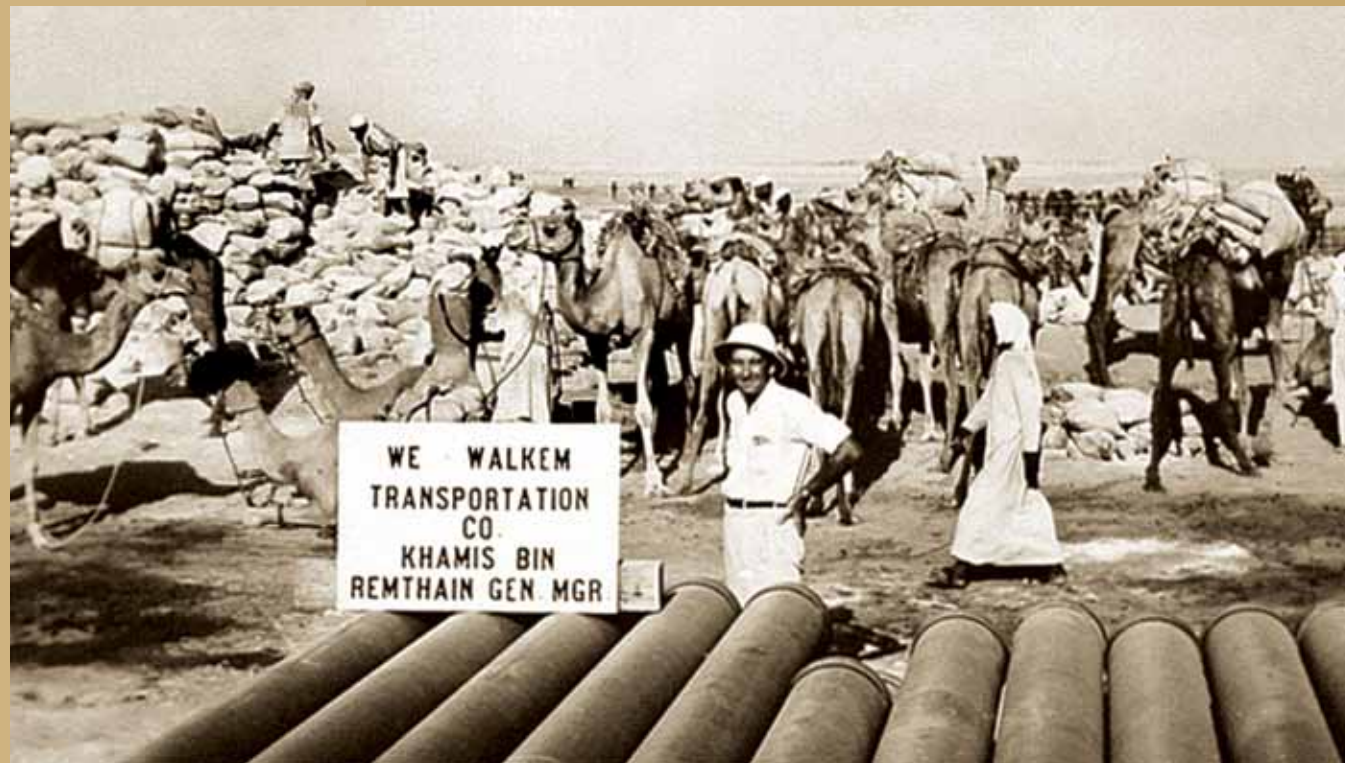


Commissary chief Steve Furman developed extensive vegetable gardens and used selective breeding to improve herds of cattle and sheep, providing employees with fresh produce and meat. Wartime scarcities made the extra supplies particularly appreciated.

Gradually, despite losing a ship full of crucial material to an enemy torpedo during this period, things started to improve. Bunkhouses were built, recreational facilities were completed, and progress on construction quickly gathered steam. About 900 American workers (500 with Aramco and 400 with Bechtel) and workers from India and Iraq were making important contributions in jobs that the oilmen determined could not be immediately filled by Saudis. In addition, the first 88 of roughly 1,000 Italian workers arrived from Eritrea, Italy's former colony in East Africa. Craftsmen among this group built a number of handsome stone buildings in Dhahran, including a building for the nearby U.S. Consulate, many of which are still in use today. The Italians were housed in their own camps near al-Khobar and on the sand spit at Ras Tanura where the new refinery was located. Soon, a makeshift Italian restaurant opened on the beach.

### Camel Trains

By mid-1942, the oilmen in Dhahran were faced with two problems for which they eventually found a single solution. They were running short of both gasoline and trucks that were fit enough to make the arduous 48-kilometer trip to the Abqaiq Well No. 3 site. Plus, they were under intense pressure from the government to provide more employment to Saudis, whose cost of living had skyrocketed because of the wartime inflation affecting nearly everything they consumed.



To conserve gasoline, employ additional Saudis and reduce wear and tear on trucks, Casoc guide Khamis ibn Rimthan helped organize a camel caravan to convey supplies to the Abqaiq Well No. 3 site, 48 kilometers from Dhahran.

The solution was to hire more than 100 Bedouins with camels to load supplies at depots in Dhahran or at the pier in al-Khobar and deliver the goods where needed. They were paid roughly what the company was paying local truck drivers for similar work. A few nights after the first camel train left Dhahran, an English-language broadcast from Berlin crowed that the Axis ocean blockade was so effective that Casoc had been forced to abandon its trucks and use camel power to deliver basic materials across the desert. The German army may have been hundreds of kilometers away in Egypt, but the oilmen quickly learned that the Axis Powers had eyes and ears in al-Hasa.



Fire Chief Joseph Hayes poses with his crew at Ras Tanura in October 1945. As World War II drew to a close, Aramco expanded its workforce at an unprecedented rate, adding more than 10,000 employees, including more than 8,000 Saudis, in 1945.

With the war in the Pacific requiring fuel and with a new refinery to operate, a huge expansion of Aramco's drilling and oil production operations was required. During 1945, Aramco produced 58,000 bpd of crude oil, more than four times its annual production in the early years of the war. Back-of-the-envelope estimates indicated the company needed to drill 20 more wells, while also drilling water wells to support the effort and bringing in all of the assorted tools and supplies necessary for each well.

### A New Name

Despite more than a decade of challenges as well as the tumult created by wartime geopolitics, in the closing years of the war it was clear to all that Saudi Arabia was destined to be a worldwide provider of oil. It seemed appropriate to change the oil company's name at the time—the California Arabian Standard Oil Company—to something that more accurately reflected the Kingdom's newfound prominence. Thus, on January 31, 1944, the name was changed to the Arabian American Oil Company, which was soon better known as Aramco.

Even though the company changed its name to Aramco in January 1944, it continued to operate under the concessionaire's corporate identity. Two years later, a company-wide design competition was announced in the company's newspaper. A winning design was selected and soon appeared everywhere, including on company aircraft, shown here in 1949.



**THE KING AND THE PRESIDENT** President Roosevelt, his health seeming to worsen by the day even as he embarked on the start of his fourth presidential term in early 1945, turned his attention to the planned Yalta Conference in February. With Allied victory within reach, this secret meeting with Britain's Winston Churchill and the Soviet Union's Joseph Stalin set the terms for the postwar world order. America and the USSR were clearly in the ascendancy, despite the latter's horrendous wartime losses, while Britain, effectively bankrupted by the war, looked as if it would soon be in retreat from the world stage.

Despite grappling with such weighty matters and suffering from poor health, Roosevelt hadn't forgotten about King 'Abd al-'Aziz and the importance of Saudi Arabia's vast oil fields to U.S. interests. With Yalta behind him, Roosevelt headed for another top-secret meeting, this time a tête-à-tête with King 'Abd al-'Aziz himself.

The significance of this meeting cannot be overemphasized. By now King 'Abd al-'Aziz and his country had arrived on the world scene. He had the ear of the American president. The voices of the Saudi people were heard by the most influential leader of the Western world.

Italian workers from the former Italian colony of Eritrea started to arrive in 1944 to help alleviate a labor shortage. Skilled craftsmen among the group built stone buildings that are still in use today, including the Dhahran dining hall, pictured in 1948, and the nearby U.S. Consulate.

## Aramco's Italian Craftsmen

During World War II, most American craftsmen served in the armed forces or worked in defense-related plants, creating a shortage in other sectors. Meanwhile, the Allied victory in North Africa left hundreds of skilled Italians in the former Italian colony of Eritrea standing idle, having been interned by the British in 1941 as prisoners of war. Some were released to work for American firms such as Douglas Aircraft, but guarding the remaining Italians in Eritrea continued to drain Allied resources.

In 1943, Aramco received permission to build the Ras Tanura Refinery but found it lacked skilled workers. At the suggestion of Colonel L. T. "Stormy" Weathers, those in charge of the operation turned to the Italian internees for a new source of carpenters, plumbers, masons and other skilled labor. In 1944, after securing the King's assent to the presence of Italian workers on a temporary basis, Aramco began the process of bringing in more than 1,000 men. Ilo Battigelli, an Italian photographer hired to document Aramco's refinery construction project, recalled, "We left Eritrea for Saudi Arabia not for adventure, but out of hunger. I wanted to eat more than once a day." Conditions were hard in Saudi Arabia, but the assignment gave the Italians an opportunity to earn wages from their skills.

Half of the men were repatriated to Italy in late 1945 after the completion of the refinery, but the remainder stayed. The need for Italian craftsmen waned over the following decades, although the growth of Saudi Arabia's industrial sector led to a hiring surge in 1951. With the arrival after 1948 of Palestinian refugees, who served as an alternative pool of skilled workers, the number of Italians dwindled to 33 by 1961.



Italian workers lived in two separate seaside communities such as this one near the site of the Ras Tanura Refinery. Their dining hall was popular with many other expatriate workers.

King 'Abd al-'Aziz and an entourage of 48 left Jiddah aboard the USS *Murphy* to meet with President Roosevelt at Bitter Lake in the Suez Canal Zone. (King 'Abd al-'Aziz preferred to stay in a tent on the ship's deck rather than in the cramped below-deck quarters.) Once the party arrived, the USS *Murphy* pulled up to the USS *Quincy*, and the King transferred to the ship carrying the U.S. president.

During the meeting, the two aging leaders reaffirmed their mutual respect. One had led his nation through the Great Depression and World War II, while the other had united regions and tribes and forged a new nation. They remained divided on the issue of creating a Jewish state in Palestine but seemed kindred spirits on other subjects.

On his return to Riyadh, King 'Abd al-'Aziz prepared to confront the challenges facing his country and people in the postwar era. The government was anxiously awaiting the increase in oil production promised by Aramco, as that would translate directly into increased royalties for the Kingdom. With more revenue, the government planned to begin numerous public works projects that had been shelved for the duration of the war, including schools, hospitals and transportation endeavors. Finally, the Saudi people were poised to benefit directly from the underground bounty that Aramco would produce in sustained and record-breaking fashion.



The arrival of a shipment of scarce steel in 1944 turned Ras Tanura into a beehive of industrial activity as Aramco began to construct a major new refinery. The U.S. government, which sent the steel, intended the refinery to supply fuel for Allied war efforts in the Pacific, but the war ended before the refinery started running.

CHAPTER FIVE

# Expansion



The Trans-Arabian Pipeline, 1951.



Aramco discovered Safaniya, the world's largest offshore oil field, in 1951 after two years of exploration in the shallow Gulf waters. The *Queen Mary*, a seagoing drilling barge, pictured here in July 1951, supported the fixed drilling platforms of Safaniya by generating power and mixing drilling mud.

Whether examined through the lens of industry, culture or geopolitics, World War II and the years immediately following were a pivotal time in the histories of both Aramco and Saudi Arabia.

The company was evolving from its early exploration phase to a period in which it would focus all of its energies on meeting the rapidly increasing worldwide demand for oil. Of course, exploration continued to be emphasized, as the 1951 discovery of the Safaniya field, the world's largest offshore oil field, and the discovery of the true size of the supergiant Ghawar field by the mid-1950s attested. During the postwar period, Aramco also expanded its public and government relations activities, recruiting Arabists from the U.S. military and elsewhere to create its own corporate research organization to better understand the Saudi culture and enhance its relations with the government.

During World War II, Saudi officials were well aware of reports in the international press estimating the vast amounts of oil in the Aramco concession. During the worst of the war years, low oil production had kept royalty income minimal. However, as the Allies appeared headed toward victory, Saudi leaders fully expected significant production increases to fund their plans to develop and modernize the Kingdom.

By the late summer of 1944, Aramco was eager to finally leverage the Kingdom's tremendous underground resources within its concession. U.S. Consul Parker T. Hart observed the oil company activity as he arrived in Dhahran in mid-August 1944. "Cemented wells were being opened, the refinery at Bahrein was being enlarged in preparation for liaison by underwater pipeline to be laid from Dhahran, and construction of a refinery at Ras Tanura was due to begin shortly. The war was not yet over, and the massive expansion in operation bore the character of 'war effort' as well as preparation for immediate postwar marketing."

**UNEXPECTED DEMAND** World War II ended with the formal surrender of Japanese forces in September 1945, less than a month before the first distillation unit went online at the new Ras Tanura Refinery. The initial unit was engineered to process 25,000 bpd of crude oil, but by mid-November it was averaging 31,000 bpd. By year's end, the unit was refining more than 37,000 bpd. From there, production continued to soar. The refinery processed 2.9 million barrels of oil in the final few months of 1945, 29 million barrels in 1946, 39 million barrels in 1947 and 45 million barrels in 1948.

Steel to build the Ras Tanura Refinery had been diverted from other uses by Washington in 1944 to help fuel the war effort against the Japanese. However, the fighting concluded sooner than military planners had anticipated. A number of experts predicted that the demand for oil would drop, even though the U.S. Navy still required enormous amounts of fuel to maintain its





The heart of the Dhahran community is this row of three buildings, which house a canteen, post office and laundry. The company's headquarters offices rise in the background of this 1952 photograph.

Pacific Fleet and rebuild stockpiles. In fact, some fretted that global refinery output would have storage tanks overflowing as wartime demand lessened. They need not have worried.

Gasoline rationing in the United States was lifted within 24 hours of Japan's formal surrender, and Americans hit the road in record numbers. Automobile sales soared. Between 1945 and 1950, the number of American cars increased by 50 percent. In addition, continuing a trend that began before the war, oil was increasingly replacing coal as the fuel of choice for residential and commercial heating needs. This shift from coal to oil gathered momentum in the late 1940s, a trend that continued in the following decades.

Despite the fact that oil companies continued to discover greater reserves of oil in the United States and Canada, the new fields could not be developed fast enough to meet the ever-growing demand. As a result, crude oil prices more than doubled between 1945 and 1948, and the United States had no choice but to step up imports. By 1948, America became a net importer of oil for the first time. The tight market and higher retail gas prices spurred multiple congressional investigations of the oil industry. However, the unexpected spike in demand also allayed concerns that oil from Saudi Arabia, the newly developed supergiant Burgan field in Kuwait and elsewhere in the Middle East was going to flood global markets and depress prices.

Postwar reconstruction in Europe, funded initially by international bodies such as the World Bank and later by the U.S.-financed Marshall Plan, also contributed to the unexpected demand for crude oil. Out of every dollar in aid under the Marshall Plan, an estimated 20 cents was spent on crude oil or related products. In addition, postwar labor strife in many of Europe's coal fields accelerated the conversion of significant portions of the European economy to oil.

## U.S. Diplomatic Presence

By the final year of World War II, Saudi Arabia had gained worldwide recognition as a major source of oil, which added a new dimension to its respected position within the global community. Indeed, as postwar rebuilding efforts began, Saudi Arabian oil quickly became the primary fuel for European recovery. As a result, the U.S. government rapidly moved to increase its diplomatic presence in the Kingdom.

The first U.S. diplomats assigned to reside in Saudi Arabia, Consul Parker T. Hart and Vice-Consul Clarence J. McIntosh, arrived in Dhahran within one day of each other in mid-August 1944. Prior to this, U.S. diplomatic efforts in Saudi Arabia had been carried out from Cairo by Bert Fish, American minister to Egypt, who added the duties of minister to Saudi Arabia in 1939 following Casoc's signing of the Supplementary Agreement. James S. Moose Jr. had opened the first American legation in Saudi Arabia in Jiddah on May 1, 1942, serving as *chargé d'affaires ad interim*. He was succeeded in August 1944 by retired U.S. Marine Colonel William A. Eddy, an Arabist born and raised in Lebanon. Eddy, a decorated World War I veteran, served as interpreter when King 'Abd al-'Aziz met with U.S. President Franklin D. Roosevelt in February 1945. (After stepping down from his post, Eddy joined Aramco as a government relations consultant in 1947.)

Hart and McIntosh ran the first consulate in the Eastern Province out of living quarters provided by Aramco, House No. 1635 on Gazelle Circle, where two desks crammed into the living room sufficed as an office. (The street was referred to as Easter Egg Row by camp veterans because it was where the company tested the ability of different paint hues to withstand the harsh Saudi environment.) In November 1944, the company gave them space in what was called the "old office area." By the following July, finding the heat unbearable, they returned to their cramped but cooler "office" on Easter Egg Row.

Hart and McIntosh carefully chose the site for the present consulate in 1945. McIntosh described the prospect in a letter home: "We sort of settled on a place about one mile from the Aramco camp and up on a hill overlooking all there is to overlook around Dhahran. We could see the sea, Bahrein, the town of al-Khobar on the sea, the airfield, native camp and the American camp." Construction of the consulate did not start until 1948. The work crew reflected the diverse demographics in Dhahran at the time. It included three Italians, a mason, a carpenter and a heavy-equipment driver—who were among the remnants of the Italians brought from Eritrea to Saudi Arabia to work for the company during the war. Other skilled laborers commuted to the site from Bahrain. Saudi contractors brought in the rest of the workers from Qatif, as well as Oman and Abu Dhabi. The warehouse and maintenance area of the consulate was finished by early 1949, and the entire project was completed in August 1951.

While the diplomats developed warm relations with Saudi officials in the province and in Riyadh, they had no illusions about their relative importance in the development of American interests in the region. Like nearly everyone who worked with Tom Barger, who had switched from Geology to Government Relations in 1941, they were impressed with the non-diplomat's diplomatic touch with the Saudis. As M. R. Rutherford, the consul at Dhahran from 1949–1952, recalled, "Aramco was more important to the Kingdom than was its relationship with the U.S. Government. There would have been no reason to have had a consulate in Dhahran, had it not been that Aramco was there. The relationships which existed with the Saudis, as carried on by Tom Barger for instance, were probably more important than those of our 'official family.'"



Newly appointed U.S. Consul Parker T. Hart stands in his temporary Dhahran offices in 1944. Though only 33 years old, Hart had already served with distinction in Austria and Brazil when he was named the first consul to Saudi Arabia. For the next 20 years, he moved between various assignments in the Middle East before retiring in 1965 from the position of ambassador to Saudi Arabia.



The U.S. Consulate moved from a residential house into this Aramco office building in 1944, but the following summer, the two-man staff returned to the relatively cooler home to await construction of the permanent consulate.

Even before World War II ended, Aramco owners, Socal and The Texas Company, had decided that they needed to begin planning a 1,200-kilometer pipeline to deliver Saudi oil to European markets. On March 14, 1945, The Texas Company's annual report alerted shareholders that Aramco had already made preliminary surveys for such a pipeline to the Mediterranean and had begun the process of securing rights-of-way from governments whose territory it would cross.

**“THE GREATEST OIL COMPANY IN THE WORLD”** James “Mr. Mac” MacPherson, a hard-charging Scot, joined Socal in 1919 after serving in the British Army during World War I. Following a stint on the War Production Board in Washington, D.C., during the early years of WWII, MacPherson was dispatched to Dhahran in July 1944 to lead Aramco's building boom. Even while overseeing construction of Ras Tanura Refinery, hundreds of kilometers of pipelines, projects at Abqaiq, expanded drilling programs and planning the proposed Trans-Arabian Pipeline, MacPherson was exhorting his senior staff to think big, and then bigger. After pouring roughly \$80 million into the Saudi Arabian concession, Socal and The Texas Company were finally beginning to see a return on their investment. The owners looked forward to an era of mounting prosperity.

Many Saudis received skills training at the Ras Tanura Refinery complex in the immediate postwar years.



MacPherson often gathered his senior staff in his office as if he were conducting a military briefing. “I used to point at a globe and tell them, ‘That is our oil market,’” MacPherson told his friend, the U.S. diplomat Parker Hart. Sitting on unprecedented crude oil reserves and straddling East and West, Aramco's destiny, he declared, was to become “the greatest oil company in the world.”

As a testament to his leadership, and that of General Manager T. “Vic” Stapleton, Assistant General Manager Elmo Fuller and the labor of the thousands of workers toiling in the oil fields, Aramco's oil production skyrocketed more than 25-fold, from 21,000 bpd in 1944 to almost 500,000 bpd by early 1949. That latter number was just shy of the total daily production of oil in Iran, where crude had been discovered three decades earlier. Hart later recalled that MacPherson had confided to him in 1949 that Aramco's production capacity could have been nearly doubled to 1 million barrels daily in short order if the shareholder companies had so desired.

Despite these glowing numbers, tension arose regarding how and when the company should proceed in building the Trans-Arabian Pipeline and other infrastructure projects required to reach its goals. MacPherson and others in Dhahran argued that Aramco and its shareholders should go it alone, but back in the United States, the shareholders were skeptical. The company anticipated spending a minimum of \$100 million on the pipeline, an estimate that proved dramatically low. In addition, building a pipeline would take years to complete. They neither wanted to spend that much nor wait that long.

**BUILDING ALLIANCES** While the Aramco shareholders sorted out their legitimate concerns regarding such a project, they were simultaneously confronted by equally legitimate concerns of the Saudi government, which was seeking increased crude oil production. The Saudi leadership was clearly aware that two other oil companies, Standard Oil Company of New Jersey (Jersey) and Socony-Vacuum Oil Company (formerly Standard Oil Company of New York), were on the prowl for additional crude oil reserves. Their membership in the IPC consortium, which had crafted the Red Line Agreement in the 1920s, kept them from acting on their own in Saudi Arabia. That left the U.S. companies increasingly anxious to gain a foothold in the Eastern Hemisphere. As Jersey pointed out, “Recent long-term estimates of needs for oil products have shown clearly that unless substantial additional sources of crude oil become available in the Eastern Hemisphere, an increasingly serious drain will develop on Western Hemisphere sources—which must themselves meet expanding market demands here.”

With the Aramco partners needing additional capital, and the other two oil companies wanting to tap reserves in the Middle East, some sort of alliance seemed both necessary and expedient. In May 1946, officers of Jersey met with their counterparts at Socal and The Texas Company. That July, Jersey brought Socony officials to join in meetings with the two Aramco owners. Initially Jersey and Socony planned to buy a combined one-third interest in Aramco. By November, Jersey and Socony agreed that they would acquire a combined 40 percent interest in the company, with Jersey owning 30 percent and Socony buying 10 percent. Socal and The Texas Company each retained 30 percent.

The parties initialed an agreement on December 14, 1946, which provided for payments over several years of \$240 million including a \$102 million payment up front. The new ownership structure applied to Tapline. The companies initialed a statement of intent expressing “an understanding that Aramco would be managed by its Board of Directors, the individual members of which would always be guided by the principle that Aramco would be run for its own benefit as a separate entity.”

Despite combining the overseas interests of three of the larger members of the Standard Oil Trust that had been dissolved in 1911, the proposed four-way ownership of Aramco eventually passed muster with U.S. antitrust officials. However, it ran into trouble in foreign courts concerning the 1920s Red Line Agreement, which restricted IPC member companies' ability to prospect on



Shown in the mid-1940s, the Ras Tanura Refinery complex spanned the entire width of a narrow sand spit. Rows of tanks stored oil for export tankers calling at the terminal.



In July 1944, James MacPherson went directly from Washington, D.C., where he served on the War Production Board, to Dhahran, where, as vice president of Aramco, he led the building boom under way in anticipation of war's end.

One year after the defeat of Germany in 1945, London shows deep scars from the Blitz, which destroyed thousands of homes and other buildings. It took years—and vast quantities of oil—to rebuild Europe's devastated cities and industries.



their own for oil in the Gulf region. Jersey and Socony sought opinions from three British counsels as to their legal right to invest in Aramco. Each concluded that the Red Line Agreement had been terminated during World War II when IPC shares held by Red Line signatories Compagnie Française des Pétroles and National Bank of Turkey shareholder Calouste Gulbenkian had been seized by the British government on the grounds they were based in countries under Nazi control. Both the French company and Gulbenkian disagreed and took Jersey and Socony to court in England.

Aramco was concerned that ownership of a portion of the company might fall into foreign hands should Jersey and Socony lose their case. Aramco's legal counsel, Felix T. Smith, came up with an ingenious solution to the problem. On March 12, 1947, the December 1946 agreement was modified. The up-front payment of \$102 million from Jersey and Socony was converted into a loan, thereby providing, in effect, immediate capital to fund Aramco's expansion. Moreover, converting the payment to a loan (with the money provided by a group of banks and guaranteed by Jersey and Socony) eliminated the possibility that Aramco ownership might fall into foreign hands, whatever the outcome of the Red Line court battle. Once the legal cloud was lifted, the loan would be repaid and converted into equity ownership for the two American oil companies. The French company settled the dispute out of court in 1947, but negotiations with Gulbenkian dragged on until finally being settled in November 1948.

With the initial \$102 million payment to Socal and The Texas Company, the original shareholders recouped their combined \$80 million investment in Aramco through 1946, and each received a

dividend of \$11 million. These arrangements, plus subsequent payments from Jersey and Socony over the next few years that eventually totaled \$240 million, arguably were a bargain for the original shareholders, even though they were each left holding only a 30 percent stake in Aramco.

**TAPLINE** At war's end, Europe received about 75 percent of its oil from the Western Hemisphere. A series of talking points distributed within the U.S. government arguing in favor of the steel allocation to forge the sections of pipe for the Trans-Arabian Pipeline, or Tapline, estimated that by 1952, Western Europe would be importing about 80 percent of its oil from the Middle East—assuming the oil could be transported in a timely and economical fashion. A pipeline from the Saudi oil fields to the Mediterranean was the best way to accomplish that goal. While the required 305,000 tons of steel was a lot in a time when the material was in short supply, it was less than the 430,000 tons necessary to build the 70 oil tankers required to carry an equal amount of oil by sea. Oil tankers would have to take the oil from Ras Tanura, around the Arabian Peninsula into the Red Sea and through the Suez Canal to the Mediterranean—a nearly 6,000-kilometer trip, one way. The pipeline was far more efficient and economical.

With the new ownership of Aramco in place, the four shareholders could now focus on Tapline. Initial plans called for a route running north and west across Saudi Arabia (paralleling the Iraqi border) and then cutting west through Transjordan and Palestine to the port of Haifa, which had deep-water facilities. Mounting tensions in Palestine threw a wrench in these plans, however, as it became clear that the newly formed United Nations was likely to vote in favor of the creation of Israel. Aramco redirected the pipeline as it left Saudi Arabia, placing it on a more northerly route through Transjordan, Syria and Lebanon to the port of Sidon.

Despite mounting tensions in the region, Aramco officials relatively quickly reached agreements with the countries through which the pipeline would pass. Transjordan and Lebanon signed Tapline agreements in August 1946, and Saudi Arabia and Syria signed in July and September 1947,



The last shipment of steel pipe for Tapline is loaded at Long Beach, California, in June 1950.



respectively. The U.N. vote that November to partition Palestine into separate Arab and Jewish states led to the 1948 Arab-Israeli War. Demands in the region that oil be used as a weapon against Israel's supporters (including the United States) led to protests against Tapline plans as well. Syrian political convulsions resulted in a coup d'état and the assassination of Husni Al-Za'im, Syrian president and former chief of staff of the army, in 1949. Nevertheless, the military government that assumed power that year eventually honored the previous government's Tapline agreement.

As it had for the refinery at Ras Tanura during the war, the U.S. government in 1948 approved allocating scarce steel for the construction of Tapline. Leading independent American oil companies, along with senators and representatives, sharply criticized their government for once again showing favoritism to the big oil companies. The government, this time unable to claim that allocating steel for Tapline directly benefited U.S. national security, instead argued that Tapline would bolster the economic security and therefore the political stability of its European allies. Congressional opposition halted steel shipments for the project for several months in 1948, but eventually the steel export licenses were renewed and shipments resumed in January 1949.

Even before construction began on the eastern end of the line in 1948, Tapline was wrapped in superlatives. It cost \$230 million and was the longest pipeline in existence, running 1,200 kilometers from Qaisumah in the northern Saudi desert to Sidon on the Mediterranean. Another 500-kilometer stretch of pipeline linked Aramco's fields in eastern Saudi Arabia to the main pipeline at Qaisumah. The project also required what was the largest-ever peacetime shipment of materials. More than 5 billion-ton miles of ocean shipping and 150 million-ton miles of field trucking were needed to transport the vast amounts of material and equipment. In addition, the pipeline traversed extremely barren and harsh terrain.

Construction material for the project was offloaded from ships at Ras al-Mish'ab, a remote location on the Gulf 300 kilometers north of Dhahran. Workers used to the relative comforts of the Dhahran camp were in for a shock when they arrived at Tapline base camp, where Bechtel was in charge of construction. The camp at Ras al-Mish'ab was a throwback to the "good old days" of the mid-1930s for American workers, though not dramatically different from conditions

in Dhahran for the approximately 14,500 Saudis who lived and worked there. Michael Sheldon Cheney, a former Aramco Public Affairs employee and author of *Big Oil Man from Arabia*, cast a gimlet eye on the camp when he arrived in 1948:

I was little cheered by my first view of Ras Mish'ab, which consisted entirely of a rectangle of sand enclosed by a wire fence, holding a huddle of tin-roofed workshops and warehouses and four long rows of barracks. The latter proved to be sheepsheds of inferior design. They held forty-eight men apiece, in twenty-four rooms each roughly the size of a tandem outhouse. The buildings were split in the middle by showers and toilets that worked in good weather, as well as an air-conditioning unit whose noise carried to both ends of the building but whose cooler air never got past the first two rooms on each side. Mine was an end room, a tin oven in which I found a roommate about medium-well done.

The project required more than 200,000 sections of nine-meter-long steel pipe. The pipe had been ingeniously fabricated in 76- and 78-centimeter-diameter sections, so that the smaller slipped inside the latter for shipping, sharply reducing shipping time and costs. Bags of cement and other materials were stuffed into the inner pipe.

Due to the shallow Gulf coastal waters, ships carrying heavy loads could get no closer than four kilometers from shore. To bring the pipe sections from that point to the shore, the Bechtel crews crafted a solution dubbed the Sky Hook.

As Cheney observed, "The dominant feature of Mish'ab's depressed skyline was a series of towering, stork-legged A-frames, rather resembling croquet wickets, strung out at intervals from pipe yard ashore to the man-made Sea Island two and a half miles [four kilometers] out in the gulf. This was the Sky Hook. Through its frames were strung heavy cables along which rode three self-propelled cable cars, shuttling from Sea Island to shore with triple loads of nested pipes dangling below them. Swaying in the wind eighty feet [24 meters] above the water, these doodlebugs offered a stirring ride, since the natural slack in the cables made long loops between towers that imparted a roller-coaster effect."



A worker adjusts a valve at Tapline's Sidon, Lebanon, terminal where the first tanker arrived December 2, 1950. In 1951, its first full year of operations, the Sidon terminal received 14.2 million barrels of oil from Tapline. Seven years later, the figure had risen to more than 135 million barrels.

### Qaisumah to Turaif

Early Aramco maps bore place names collected from Bedouins, by company geologists who had little knowledge of Arabic or its numerous dialects. Some used no place names at all—the Tapline pumping stations were originally, in most cases, numbered rather than named. In 1949, Aramco decided to send two researchers and distinguished Arabists, Drs. Charles D. Mathews and George Rentz, along the pipeline to develop appropriate station names by identifying the Arabic names already used for the areas. Certain criteria were followed: The names could not be misleading, irreverent or indecent. To simplify life for English speakers, the difficult-to-pronounce Arabic consonants 'ayn and ghayn were avoided.

The names the researchers chose for the pump stations often referred to local geologic features, such as Wadi Badanah (a tributary of Wadi 'Ar'ar); Qaisumah (a type of desert bush); and Turaif (outermost point, edge) on the Jordanian border.

The linguistic research was not without its lighter moments. Rentz thought he came across a speaker of Harsusi, a rare Semitic language, and spent weeks collecting words and phrases only to find out later that the man had a speech impediment. In another incident, Rentz wrestled with the origins and meaning of the Gulf shoal called Retlawenna. Eventually, chief paleontologist Richard A. Bramkamp confided that he had created it from the names of his children, Walter and Anne, spelled backward.



Posted in Sidon, Lebanon, in the 1950s, this signpost points the way to Tapline's major pump stations and also to Abqaiq, where much of the oil for Tapline was first processed.

## Tapline Towns

Six pumping stations, supported by small towns with trim homes, recreation and dining halls and schools, rose like mirages along the barren desert path of the pipeline. By the mid-1960s, Tapline towns, complete with mosques, shops and government services, had grown to accommodate more than 5,000 inhabitants combined. "They became real municipalities with governing *amirs*, police, utilities, hospitals, clinics, water and airports," said longtime Aramco attorney Fred H. Drucker. "They varied in size, but all were real communities." These small, self-contained towns boasted such amenities as golf courses, tennis courts, baseball fields, theaters and playgrounds. Turaif, Badanah, Rafha and Qaisumah each had a small hospital or clinic that by 1963 had a total of 68 beds and between them employed 15 doctors and 48 nurses.

Because of their isolation, Tapline towns such as Badanah, seen here in 1952, were very close-knit communities.



Bedouins also benefited from these developments. Nearly 40 water wells drilled along Tapline were eventually turned over to the government for Bedouin use. In fact, the Saudi government made this a condition for approving Tapline. By 1950, as many as 100,000 Bedouins with their herds of camels, sheep and goats summered along Tapline to take advantage of its water sources.

Once on shore, the pipes were welded together, three sections at a time, to reduce the number of field welds required under conditions that were likely to be harsher than those at the base camp. The resulting 27-meter pipe sections were then hoisted onto specially designed giant Kenworth trucks that could carry a maximum load of 50 tons. The rear ends of the sections rested on dollies riding well behind the trucks, which sent small dust storms churning across the desert behind them.

The pump stations pushed the oil to the sparsely populated northwest corner of Saudi Arabia, roughly halfway on its 1,200-kilometer journey. There, from an elevation of about 915 meters, it flowed downhill through a desolate portion of northern Jordan covered with black lava outflows and then across southern Syria and into Lebanon. At Sidon, the American construction firm of Williams Brothers was building a terminal and storage tanks for 3.5 million barrels of oil, as well as the westernmost 321 kilometers of pipeline. The Williams and Bechtel crews met in Jordan, near the Saudi Arabian border, in September 1950 to weld the final pipe joint in Tapline.

Before Tapline could begin transporting oil, it needed to be filled with water for pressure tests and cleaned of debris and forgotten tools with mechanized pipe "pigs," which traveled through the pipe. Filling Tapline with oil took weeks, requiring 4,400 barrels to fill 1.5 kilometers of pipe. Once full, Tapline contained 5 million barrels of oil. One barrel of oil—propelled by the six pump stations to the remote highlands of northwest Saudi Arabia and then pulled by gravity down to Sidon—took 16 days to make the trip during the initial years of the pipeline's operation.

Tapline helped ensure that Europe had a reliable source of crude oil to fuel its economic recovery in the 1950s. The impact was immediate. In 1950, Aramco produced 200 million barrels of oil. The following year, the first full year that Tapline was in operation, production jumped to 278 million barrels, 39 percent of which was shipped via Tapline. The pipeline remained a vital part of Aramco's crude oil delivery system until the late 1970s, when rising political tensions in neighboring countries and a generation of new supertankers sharply reduced the economic advantages offered by Tapline.



An operator tests the Sky Hook at the port of Ras al-Mish'ab on April 4, 1948, before it began carrying Tapline pipe sections from ship to shore. The overhead cables, which stretched nearly five kilometers, were modeled on equipment used in the logging industry.



Sections of pipe are unloaded from a ship by the Sky Hook aerial tramway in 1948. Once ashore, the sections of pipe were welded together into longer lengths and sent into the desert on massive tractor trailers.

**PROGRAMS FOR THE PEOPLE** Despite Tapline's size and complexity, Aramco also found time to undertake a number of construction and agricultural projects for the Saudi government. The largest by far were the deep-water port at Dammam and the 600-kilometer railroad connecting it to Riyadh via Dhahran, Abqaiq, Hofuf and Haradh. Aramco arranged the financing, engineering and construction, which was then subcontracted to Bechtel. In recognition of the importance of this project to the people of the Saudi Kingdom, Aramco advanced a total of roughly \$72 million, interest-free, to the Saudi government to fund the project. Repayment, out of governmental royalties, began in 1952.

Following his meetings with U.S. President Franklin Roosevelt, and a separate meeting with Winston Churchill in February 1945, King 'Abd al-'Aziz visited Egypt's King Farouq. The Saudi monarch was said to have been curious about the potential of train transport, and seeing Egypt's train system prompted King 'Abd al-'Aziz to move forward with bringing such a system

### Camping Out

Aramco veteran Walter Dell'Oro described the frontier conditions in northwest Saudi Arabia as he led one of the drilling crews along the proposed Tapline route:

When we started the Tapline water well drilling program in September 1947, we had a crew of about seven Western people, drillers, mechanics, and about 20 Saudis. We didn't have any tents—we had these folding cots, fabric cots, and that was what we slept on right in the open. We each had a folding director-type chair and these horns that stuck up and we would put our shoes on them to keep the scorpions out of our shoes. Our clothes went on the chair also. In November it started to rain.

We used to radio for our supplies and we'd tell them, 'Hey, it's starting to rain.' Then our headquarters realized that these guys had been out there over a month sleeping on cots, no tents, nothing, and the company must have sent a plane to Cairo, because all of a sudden we got a bunch of tents, and then we had shelter.

The Saudi workforce also received tents. Theirs were Egyptian style tents. We assigned them four to a tent, whereas we slept one to a tent. But what the Saudi workmen would do was to sleep maybe eight to a tent and use the other tent as a coffee and tea or eating communal tent.

A Bedouin encampment spreads across open desert in the 1950s. The Bedouins quickly became familiar with Tapline's public water wells and graded camel crossings, and modified their routes to take the welcome new facilities into account.



to his country. The Ottoman railroad in the northern Hijaz, which was attacked regularly by Arab fighters in World War I, had never been rebuilt. Aramco built its own short-haul rail line connecting Dammam, Dhahran and Abqaiq, which began operating on October 11, 1947. The work to extend the line to Riyadh was completed in 1951, and on January 1, 1953, Aramco transferred management and supervision of the entire railroad system to the government.

The Saudi leadership also enlisted Aramco to help develop a large-scale farming project south of Riyadh, begun in 1941 to increase agricultural output in the Kingdom despite its harsh growing conditions. At that time, Barger, as well as paleontologist Bramkamp, engineer Les Snyder and guide Khamis ibn Rimthan, surveyed the al-Kharj oasis area to determine if there was an adequate supply of groundwater to support a roughly 2,000-hectare agricultural project. Initially, spring water was channeled to the farms via 18-kilometer-long canals. Later, Aramco drilled several water wells to provide additional water sources. The al-Kharj project received further support from the U.S. government following King 'Abd al-'Aziz's meeting with Roosevelt.

Among the best-known postwar figures associated with the al-Kharj project were Sam Logan, a graduate of Texas A&M College with experience in irrigated farming, and his wife, Mildred. In January 1947, just one month after getting engaged, Sam left for Saudi Arabia. Within 17 months of his arrival, "Mr. Sam," as he was called (even by the King), doubled and in some cases tripled the project's output of wheat, alfalfa, vegetables and melons. The 700 to 800 Saudis working on the project also built a gravel landing strip for the King and for Aramco's use as a mid-country refueling stop for flights between Dhahran and Jiddah.

Mr. Sam's greatest legacy was animal husbandry. After he returned to Texas in May 1948 to marry Mildred, the couple (with their young daughter) went back to Saudi Arabia in 1950 so he could serve as director of al-Kharj farms for a two-year stint. In 1955, he was asked back and ran the farms until the spring of 1959. During these sojourns he developed poultry flocks using incubators that held up to 10,000 eggs. In 1951, Crown Prince Sa'ud sent Logan to the United States to buy cattle. Those animals were the beginning of what has developed into herds of more than 38,000 dairy cows.

A new diesel locomotive is offloaded in Dhahran. Though trains began running on Aramco's Dammam-to-Abqaiq rail line in 1947, it took four years for contractors to finish laying track to Riyadh, where King 'Abd al-'Aziz and Crown Prince Sa'ud ceremonially drove the last spike in October 1951.



Thousands of squash spread across the seemingly infertile desert of al-Kharj, south of Riyadh, testament to the water available just a dozen meters below the surface. Aramco was instrumental in helping develop an irrigation system and agricultural outpost at al-Kharj during and immediately after World War II.

## Good Sports

Team sports, though a common part of Saudi life today, are a relative newcomer to the Kingdom. Football, the game known as soccer in the United States, is by far the most popular. It was first introduced in Makkah by Malayan and Indonesian teams in 1925, but it took company employees from countries such as Bahrain, Italy, Somalia and Sudan to help it catch on. In the 1940s, expatriate employees began teaching the game to Saudis after work using a rag ball on a field delineated with rocks. Informal leagues sprang up in 1946, and Aramco officially incorporated the sport into its recreation program in 1948. By the early 1950s, soccer had become so popular throughout the Kingdom that the Ministry of the Interior created an office to regulate sports affairs.

Soccer spread through Aramco's schools as well. Mac Nearpass, an American teacher at the Jabal School, introduced physical education classes and team sports to the school's curriculum shortly after his arrival as a way to teach the fundamentals of teamwork and fair play. Nearpass taught other sports such as volleyball and baseball, but they did not have the immediate popularity of soccer. Nonetheless, other sports did eventually emerge within Aramco's communities. A franchise for a Saudi Arabian Little League was received in 1952, but the league did not formally start until 1954 when five teams from Aramco communities began to play. Today, the Arabian American Little League has 200 players—nearly all of them dependents of company employees—and they are drawn from the United States, Saudi Arabia, Canada, South Africa, the U.K., Australia and Venezuela. The league sent its first team to the Little League World Series in Williamsport, Pennsylvania, in 1983—a remarkable feat that has been repeated nearly 20 times over the ensuing 25 years.



Students at Aramco's Dhahran nursing school play a game of basketball in the summer of 1953. Aramco sports facilities blossomed in the early 1950s.

**“POSSIBLE HIGH AREA OFFSHORE”** While working around the clock to expand its onshore production in the late 1940s, Aramco began negotiating with the government to work offshore as well. In October 1948, Aramco signed an agreement with the government giving the company the right to prospect for oil in the waters adjacent to Saudi Arabia's Gulf coast and around the Kingdom's islands. The agreement called for Aramco to pay the government a minimum annual royalty of \$2 million.

While both the oil company and the Saudi government thought the prospects for offshore oil were promising, they were far apart on determining how quickly to begin such a major project. Shortly after signing the offshore agreement, the company began contemplating a round of belt-tightening as a recession in the United States combined with a large influx of oil into the Western Hemisphere dragged down world oil prices. In January 1949, the company was already budgeting cutbacks on land-based exploration.

In May 1949, MacPherson in Dhahran alerted Aramco President W. F. Moore at the company's New York headquarters that “Shaikh Abdulla Sulaiman has already begun to talk of commercial production of oil in offshore areas in the locations most remote from the shore. ... I am afraid the only action on our part that can alleviate the situation will be one of continuing to explore, discover and develop. The chance we take by doing otherwise is to invite a reopening of relinquishment discussions and an acceleration of royalty demands.”

MacPherson, frustrated by the decision to cut back on production and exploration and by what he saw as interference from the new shareholders in Aramco—Jersey and Socony—resigned in mid-1949 after 30 years on the payroll. (He accepted a position as second in command of the American Independent Oil Company, Aminoil, which had won the concession to explore and develop the Saudi Arabia–Kuwait Neutral Zone.)



Saudi workers man the drilling equipment of an offshore rig in 1957. Though Aramco received an offshore concession in 1948, it took nearly a decade to produce oil from Safaniya, its first offshore discovery. Those 10 years marked a period of rapid Saudization, making the all-Saudi drilling crew shown here, once unheard of, not only possible but common.



The American cargo ship *Steel Worker* unloads supplies at Dammam, one of the largest ports in Saudi Arabia, in 1952. The port was connected to Riyadh via railroad line. Aramco was assigned by the Saudi government to develop and oversee construction of the railroad and the port.



Fred Davies, by that time an executive vice president, returned to Dhahran as an interim replacement for MacPherson. In 1951, Norman “Cy” Hardy was transferred from a Socal subsidiary in South America, the Richmond Exploration Company, to Aramco to be Davies’s executive assistant. Two years after his arrival, Hardy strengthened Aramco’s budgetary controls and streamlined operations by giving more authority to lower-ranking executives. In 1958, he became Davies’s successor and eventually Aramco’s president.

Offshore production was not a new idea. Aramco veteran Dick Kerr was onto the idea almost a decade before Finance Minister ‘Abd Allah Al-Sulayman was anticipating offshore oil production. Kerr’s combination of experience during aerial surveying in the mid-1930s and seismographic work late in the decade had led him to focus on an area a few kilometers off the northern coast of Saudi Arabia in 1939. He drew a red arrow on a map pointing at a location called Safaniya and wrote, “Possible high area offshore.” In 1950, the company constructed the first offshore drilling platform at Safaniya, about three kilometers offshore and 225 kilometers north of Dhahran, near the border with Kuwait.



Radio towers dominate the skyline of Riyadh in 1950. While the government of Saudi Arabia worked to modernize Riyadh and other cities, it relied very much on Aramco in the development of infrastructure in the Eastern Province.

### Built from Scratch

Aramco calculated that despite the enormous oil processing and refining buildup in the first five years of the postwar period, it had actually spent more on support infrastructure than on the oil facilities themselves. Nearly everything the company needed to function had to be imported or built from scratch. Aramco-built power plants at Abqaiq and Ras Tanura generated enough power for the oil processing and refining facilities as well as for residential and administrative use. The output of the two plants could have supplied the needs of a small American city of 30,000 homes.

The company continued to make infrastructure improvements, although they were rarely completed as quickly as many residents of the Aramco communities would have liked. In 1950, Abqaiq received its first main sewage system, and the sewage system was augmented in Dhahran. A garage, machine shop, weather station, and telephone and radio building were added in Abqaiq as the community expanded, and automated telephone exchanges were installed to link Abqaiq, Dhahran and Ras Tanura.

By the end of 1950, Aramco was employing and housing nearly 17,500 employees, about 10,000 of whom were Saudis. Another 3,000 were Americans and 1,000 were other Arabs, many of whom were Palestinians displaced by the Arab-Israeli conflict who had been trained as technicians and professionals, as well as Yemenis and Sudanese. Other nationalities represented in significant numbers included Italians, Indians and Pakistanis. Housing remained in short supply in all three main Aramco communities through much of the 1950s.

The relatively shallow water of approximately 22 meters did not present many technical difficulties. The wildcat well struck oil in 1951, and when the field was finally put into production in 1957, it produced 50,000 bpd from 18 wells. Eventually, Aramco determined that Safaniya field and nearby Khafji field, in the Saudi-Kuwaiti Neutral Zone, were one giant field. Estimated reserves of 25 billion barrels of oil made it the largest offshore field in the world. In 1957, Aramco discovered the Manifa field, another offshore supergiant with an estimated 11 billion barrels of oil.



The gleaming spheroids of Abqaiq’s northern Buqqah plant, shown here in 1952, provided a key link in the process of separating natural gas from crude oil before the oil was stabilized for shipment.



While instructor Ahmad ibn Fahad observes, trainee Rashid ibn ‘Abd Allah practices reading a temperature indicator in 1951. Employees who hoped to work at Aramco’s GOSPs in Abqaiq and elsewhere first had to complete a rigorous six-month training program.

**ABQAIQ** Aramco’s oil processing facilities became increasingly centered in Abqaiq during the postwar years. In 1950 alone, Aramco nearly doubled its pipeline system by building 480 kilometers of pipeline, most of which snaked from producing wells and gas-oil separation plants (GOSPs) to Abqaiq for the removal of hydrogen sulfide and other volatile gases from crude oil in the stabilizing facilities. The stabilized “sweet” crude was then pumped to storage tanks at Ras Tanura’s terminal. From here, the sweetened crude was loaded onto tankers, conveyed via connecting pipeline to Qaisumah (the first pump station on Tapline) or sent through the underwater pipeline from al-Khobar to the Bapco refinery in Bahrain. The 40,000-bpd pipeline to the Bahrain refinery had been completed in 1945 and at the time was believed to be the world’s longest submarine pipeline.

Drilling in the Abqaiq field began before the war, but the pace of the program increased dramatically in the immediate postwar period. In 1946, the field produced 60 million barrels. The following year, the yield grew by 50 percent. And in 1948, with the addition of 18 new wells, production increased nearly 60 percent, to more than 140 million barrels. An area immediately north of Abqaiq, which the company initially thought was a separate field and had labeled Buqqah, was recognized by 1948 as an extension of Abqaiq.

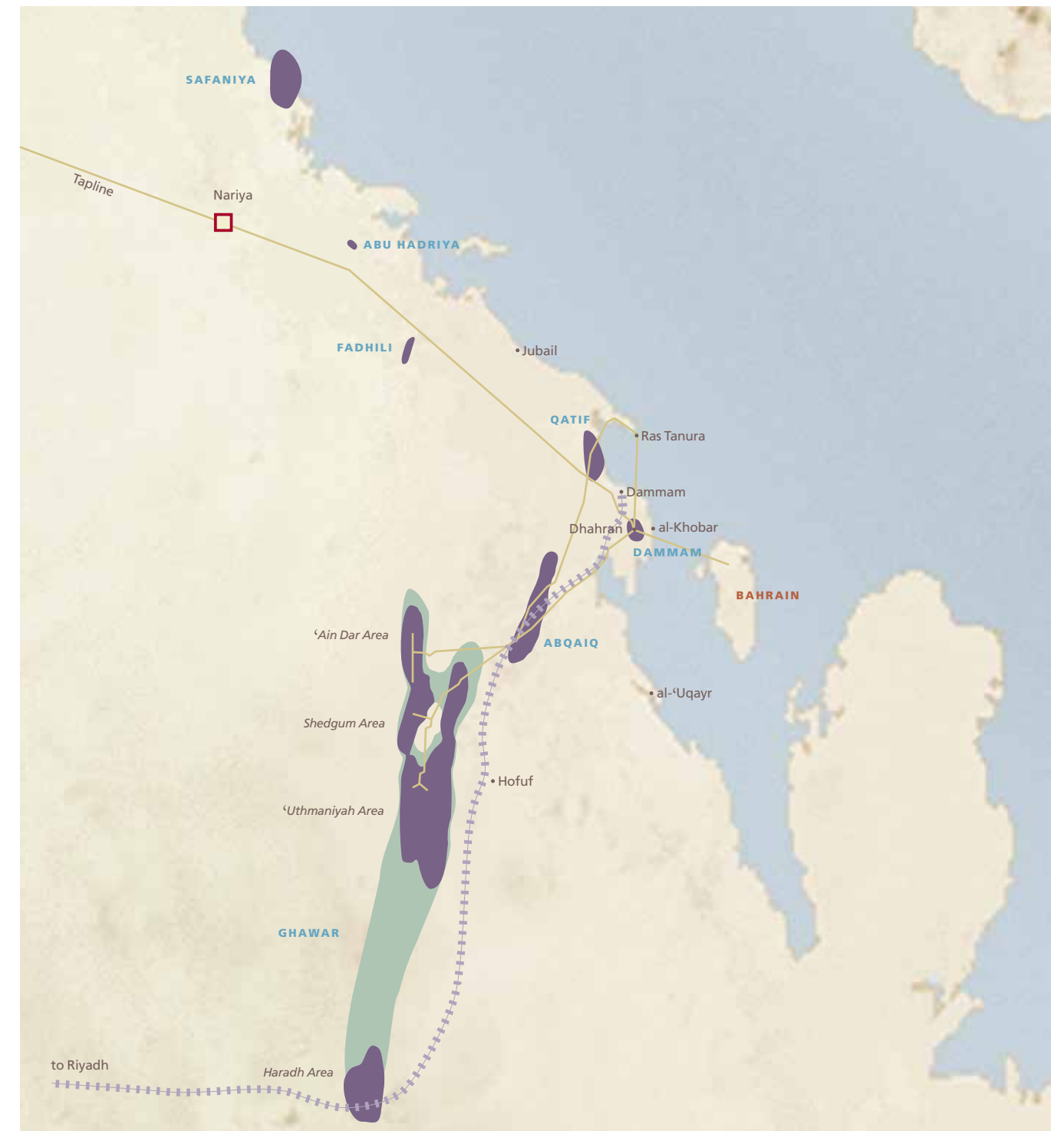
A smaller yet still significant oil field had been discovered in the Qatif area north of Dhahran in 1945. Four more wells were drilled in the Qatif area in 1948.

The true significance of the Abqaiq field was not widely appreciated at the time, even within Aramco. Petroleum engineer Paul Arnot was on a vacation in the United States in 1948, and while there, he met with James Terry Duce, vice president of Government Relations for the United States. Since 1945, Duce had been Aramco’s representative in America working to ensure close relations with the Truman administration and Congress. Duce told Arnot that, with the addition of the Abqaiq field, Aramco “had already developed more oil reserves than our combined owner companies and maybe even the United States.”

**EN NALA TO GHAWAR** Aramco may have thought it had all the crude oil it could handle by 1948, but it soon discovered much more. Prewar seismic work and structural drilling on the giant En Nala structural fold west of Abqaiq had led geologists to site the first well in an area called ‘Ain Dar. Aramco headquarters approved an appropriation of \$380,000 on March 24, 1948, to drill ‘Ain Dar Well No. 1, and the well was spudded on April 10. In little more than three months, on July 22, the company hit oil in substantial quantities at two kilometers in the Arab “D” Zone. (The Arab Zone had been subdivided into four sections, A–D, reflecting the different oil-bearing characteristics of the strata.) A second well was spudded five kilometers south and was completed at two kilometers in mid-November. Drilling on ‘Ain Dar Well No. 3 was under way by year’s end, another five kilometers farther south.

In an internal report penned less than a month after Aramco struck oil at ‘Ain Dar Well No. 1, Nestor John Sander, head of structural drilling on the En Nala structure, noted that “the presence of oil at ‘Ain Dar is of great significance for it suggests the possibility that structurally high areas along the entire En Nala anticline may be productive. The En Nala anticline is some 320 kilometers long by 24 to 32 kilometers wide and several other closed areas have already been located along it.”

Two Aramco employees visit ‘Ain Dar Well No. 40 in 1952 while a Bedouin looks on. At the time, Aramco was in the process of discovering whether ‘Ain Dar and Haradh, nearly 280 kilometers to the south, were actually part of one giant oil field.



**GHAWAR OIL FIELD**

Though Nestor John Sander, the head of structural drilling, raised the possibility of an enormous oil field stretching from ‘Ain Dar to Haradh as early as 1948, by 1952 Aramco was willing to assert with certainty only

that ‘Ain Dar, Shedgum, Ghawar, ‘Uthmaniyah and Haradh draw from the same reservoir. By 1954, additional infill drilling conclusively demonstrated the connection between ‘Ain Dar and Haradh.

**KEY**

- 1952 KNOWN OIL FIELDS
- AREAS ADDED AFTER 1952
- PIPELINE
- PUMP STATION
- SAUDI GOVERNMENT RAILROAD

**SCALE IN KILOMETERS**  
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The second and third 'Ain Dar wells did not confirm Sander's assumption that oil might exist along the length of En Nala; they merely demonstrated that there was plenty of oil in the northern 'Ain Dar area. The first real test of the En Nala hypothesis came with the drilling of Haradh Well No. 1 near the southern end of the En Nala structure. The well was spudded in September 1948 and was completed in March 1949, at two kilometers, once again in the Arab D Zone.

Saudi Aramco geologist Thomas Keith noted in an article, "Discovery of the Ghawar Field," that the En Nala anticline proved to be productive both at the extreme north and the extreme south. The light was beginning to dawn:

The next location was south of 'Ain Dar, to the next structure in the area, called 'Ghawar'... no doubt referring to the area below the escarpment that dominates the area. The well was named 'Ithmaniya' after a small jebel east of the staked location. (The spelling was later changed to 'Uthmaniyah.)

Now armed with sufficient evidence, the petroleum engineering staff in Abqaiq was ready to forge ahead with production of the region in the Arab D Zone. Bramkamp wanted well logging to continue at multiple depths to demonstrate conclusively that there was continuity among the oil-producing layers throughout the entire length of the structure. As Keith explained:

Exploration deferred some of the testing until after the area proved itself, but got most of their original program. However, it must be said, as presumptive as it may seem to call the entire anticline one field on the basis of only [the] 'Ain Dar and Haradh Fields, the engineers were, in fact, right. By 1954, infill drilling had established not only the area between 'Ain Dar and Haradh as continuous, but also added the structure east of 'Ain Dar, Shedgum, as part of the same field.

As the 1950s progressed, the Ghawar name gradually came to be used for the entire structure. A wildcat "stepout" (a new well greater than one-half kilometer from an acceptable pipeline hookup) at Hawiyah in 1954 and subsequent stepouts confirmed not only that the giant field was continuous but that it was also the largest oil field on Earth, a title it retains to this day. The Ghawar field was first described in detail in a presentation to the American Association of Petroleum Geologists (AAPG) in March 1958.

Minister of Finance 'Abd Allah Al-Sulayman meets in Dhahran with Garry Owen, center, the representative from Aramco's Government Relations Division, and Saleh Al-As'ad to discuss Tapline in 1951.



## Aramco's Offspring

The company quickly realized that it was important to invest in teaching its Saudi employees the technical and administrative skills they needed in the oil business. The first education was informal and on-the-job, and for many employees this training opened doors that would never have been available to previous generations. "Working for Aramco then was as good or better than a college education," said Suliman Olayan, an employee who later established himself as a phenomenally successful independent businessman.

By the late 1940s, the training effort began to pay indirect dividends, as entrepreneurially minded Saudis left the company to create their own businesses. Aramco, which preferred to focus its internal resources on oil production, welcomed the opportunity to contract with local companies for ancillary tasks, from cafeteria construction to the transportation of raw building materials, particularly once it found that Saudi-run contracting firms had an easier time locating the necessary skilled laborers. Aramco's "offspring" provided \$17.2 million worth of much-needed services during the building boom of 1949–51 as Aramco rushed to complete Tapline and build other facilities.

Though the construction boom faded, the need for local contractors did not. The demand shifted to transportation and the provision of goods, and the more flexible contractors soon turned their efforts toward this new goal. Before long, many of these businesses were able to relinquish their roles as middlemen in the procurement of imported goods and instead manufacture their own products. By 1962, Aramco had spent nearly \$12 million on services from Saudi firms in addition to more than \$15 million on goods purchased from Saudi suppliers. By providing a guaranteed market during the contractors' early days, Aramco enabled them to thrive and, in doing so, helped boost the Saudi economy.



Cab drivers stand ready at Aramco's Dhahran headquarters in 1948. Transportation, whether of materials or people, was one of the first services to be successfully contracted out as a part of Aramco's initiative to shift ancillary functions from its direct control into the hands of Saudi businessmen.

Sadly, Max Steineke, the Aramco chief geologist credited with having the most insight into the potential of the sedimentary formations underlying eastern Saudi Arabia, died before the true extent of the Ghawar field was conclusively demonstrated. One day in 1946, Steineke was helping to free a car that was bogged down in a *sabkha*. As Sander recalled, "He banged his knee and leg against the bumper of the car and it caused a blood clot in his leg. The clot went to his brain," resulting in a stroke. Steineke returned to the United States, where he served as an adviser to Aramco, even while his health continued to deteriorate. In 1951, Steineke received the AAPG's highest honor, the Sydney Powers Award. He died the following year.

**GOVERNMENT RELATIONS** As Aramco operations continued to expand, maintaining strong and positive relationships with the Saudi government became as important as the production and building boom itself. Company leadership had been aware of the critical importance of creating strong ties to the government from the moment Lenahan opened his office in Jiddah in October 1933. Bill Burleigh, Lenahan's assistant, drove across Saudi Arabia in 1939 and started a government relations office in Dhahran, reporting to Ohliger, the senior Casoc employee there. The group received a boost in September 1941 when Barger moved to the Government Relations Department. Another wartime addition was William Palmer, who had been charged with training the government's first oil-gauge readers, a critical initiative in that they measured the amount of oil exported to determine the size of the royalty payment to the Saudi government.

The leaders of the government relations effort (in 1945, Government Relations became a division of the Relations Department) developed a comprehensive strategy for engaging Saudi officials. Ohliger, to whom the entire department reported, dealt directly with the King and Crown Prince; Garry Owen, who had worked in the company's Jiddah and Washington, D.C., offices before coming to Dhahran during the war, worked closely with Al-Sulayman, the Minister of Finance; and Burleigh handled contacts with Amir Sa'ud ibn Jiluwi, the governor of al-Hasa Province, which the government renamed the Eastern Province in 1952. Barger dealt closely with other government representatives in the Eastern Province. William Mulligan joined the Relations Department in 1946 and in later years, due to his capable writing skills, became the company's unofficial historian.

Not all of the crucial work was being done by those leading the department. Early bilingual employees' "contributions to the successful bridging of the cultural gap between the Americans and the Saudis cannot be overstated," noted Mulligan. They included 'Ajab Khan, one of Aramco's first employees and Ohliger's personal translator and interpreter; Saleh Al-Sowayigh; Suliman Olayan; Ahmad Al-Gusaibi; Muhammad Salamah; Mustafa Husam Al-Deen; and Saif Al-Deen 'Ashoor.

Dr. George Rentz of the Arabian Research Division enjoys working with Bedouin "relators" in 1950 as part of Aramco's effort to learn details of desert geography and lore from the Bedouins.



Knowing how important it was to have a thorough understanding of the society in which it operated, the department created the Arabian Research Division. Its goal was to learn about and understand the political and socioeconomic Arabian culture in which the company operated. James P. Mandaville, who joined the group in 1957, described it as a "very unusual" organization for a business to have:

There was a group of Americans who were all specialists in Arabian culture, language, and geography, and their job was ... to interpret Arabia to management, which at that time was all American. And they were all specialists in oil but they didn't know much about this strange country, Saudi Arabia. So they set aside this group of specialists who had studied language, geography, and people to sort of advise them and also to help carry on their relations with the officials.

This research group involved members of the Arabian Research Division and some with broader government relations duties, including George Rentz (who joined the company from the U.S. Army's Office of Strategic Services in Cairo); John Anthony Sabini; F. S. "Rick" Vidal, who wrote *The Oasis of Al-Hasa*; Charles Matthews; Bob Henry; Jim Stewart; Bob Van Peurse; Harry Alter; Peter Speers; and Harry McDonald.

The importance of the Arabian Research Division is evidenced by the lengths to which Aramco leadership went to retain key members. James MacPherson, normally a taskmaster on personnel issues, thought so highly of Rentz that in 1946 he was determined not to lose him at any cost. Rentz's job was initially a temporary nine-month engagement, after which he planned to return to the University of California, Berkeley, to finish the doctorate on *Shaykh* Muhammad ibn 'Abd Al-Wahhab he had started before World War II. MacPherson was able to keep Rentz in Saudi Arabia only by agreeing to create an organization to support Rentz's work, as well as providing immediate housing for his family in Dhahran and allowing him ample time to complete his doctorate. Meeting Rentz's requests was difficult, especially at a time when the company was hard-pressed for resources, but the decision paid off. Rentz left to receive his doctorate in 1948 but returned to Saudi Arabia to work for Aramco until 1963.

'Abd Allah Haji 'Ali Al-Khajah inspects the inventory records of his department store, the first in al-Khobar, in 1951. Aramco's support of Saudi businessmen via its Arab Industrial Development Department helped transform al-Khobar over the years into a commercial center for goods imported from around the world.

An applicant for a job with Aramco reads an eye chart in January 1951. For Saudis applying to join Aramco in the 1950s, an eye examination was only one in a series of formalized tests they needed to pass in order to gain employment with the company.



**BEDOUIN CONSULTANTS** One of Mandaville's jobs in the early years was to properly identify and name geographical features as part of a Kingdom-wide aerial mapping project that began in the late 1940s. The Exploration Department arranged for the photos to be taken. Geologists in the field collected names of towns, hills, mountains, *wadis*, watercourses and anything else that went on the map, but, Mandaville recalled, "They brought them back in a state of awful gibberish. They weren't Arabic speaking. The data was turned over to us, and our job was to get them into proper Arabic."

Rather than send company Arabists to the field, Aramco brought the field to the Arabists in the persons of Bedouins whose tribes traversed the areas being mapped. Aramco called these tribesmen "relators." With the aerial maps spread on their desks or work tables, Aramco researchers such as Mandaville would invite in the local experts:

The first couple of years I essentially worked in a room with about 20 Bedouins sitting around the sides in chairs for at least part of the day answering questions about, 'Where is this place? Come and show me. Which direction is it from this? If you go north how much of a camel ride is it to reach this town? How do you say the name of that town again?' ... They would describe verbally, 'We would ride a half a day toward the North Star to get to this town.' ... Some of them did over the years gather or absorb enough cartography to be able to look at a map and orientate themselves and actually point. It was amazing. They were all illiterate; they couldn't read or write. But they were masters of description.

The work of the Arabian Research Division and the relators played an important role in transmitting knowledge about the Kingdom and its culture to the American oilmen. But it is important to note that, during this critical postwar period, each culture was learning more about the other, and both benefited. The relationship between the American and Saudi workforces in Aramco was evolving at a more rapid pace. More and more Saudis were gaining skills and experience, and at the same time their expectations about what it meant to be working shoulder to shoulder with Westerners, for a Western company, were changing as well. In addition, the Americans were learning to view Saudis as valuable coworkers.

In the minds of many "Aramcons" (as Aramco employees called themselves), the oil company's relations with the Saudi government and society were essential to the success of the entire enterprise. During policy and planning discussions with other senior Aramco executives, Barger, one of the company's future CEOs, would ask them what business they thought Aramco was in. They would invariably say it was in the business of producing oil. "No," Barger would say. "We're in the business of protecting the Concession."



Waiting for a train in Westhampton, New York, in September 1949 are six Saudi employees and their Egyptian-American chaperone. The men were part of a group of 10 selected to teach new American employees basic Arabic language skills and culture

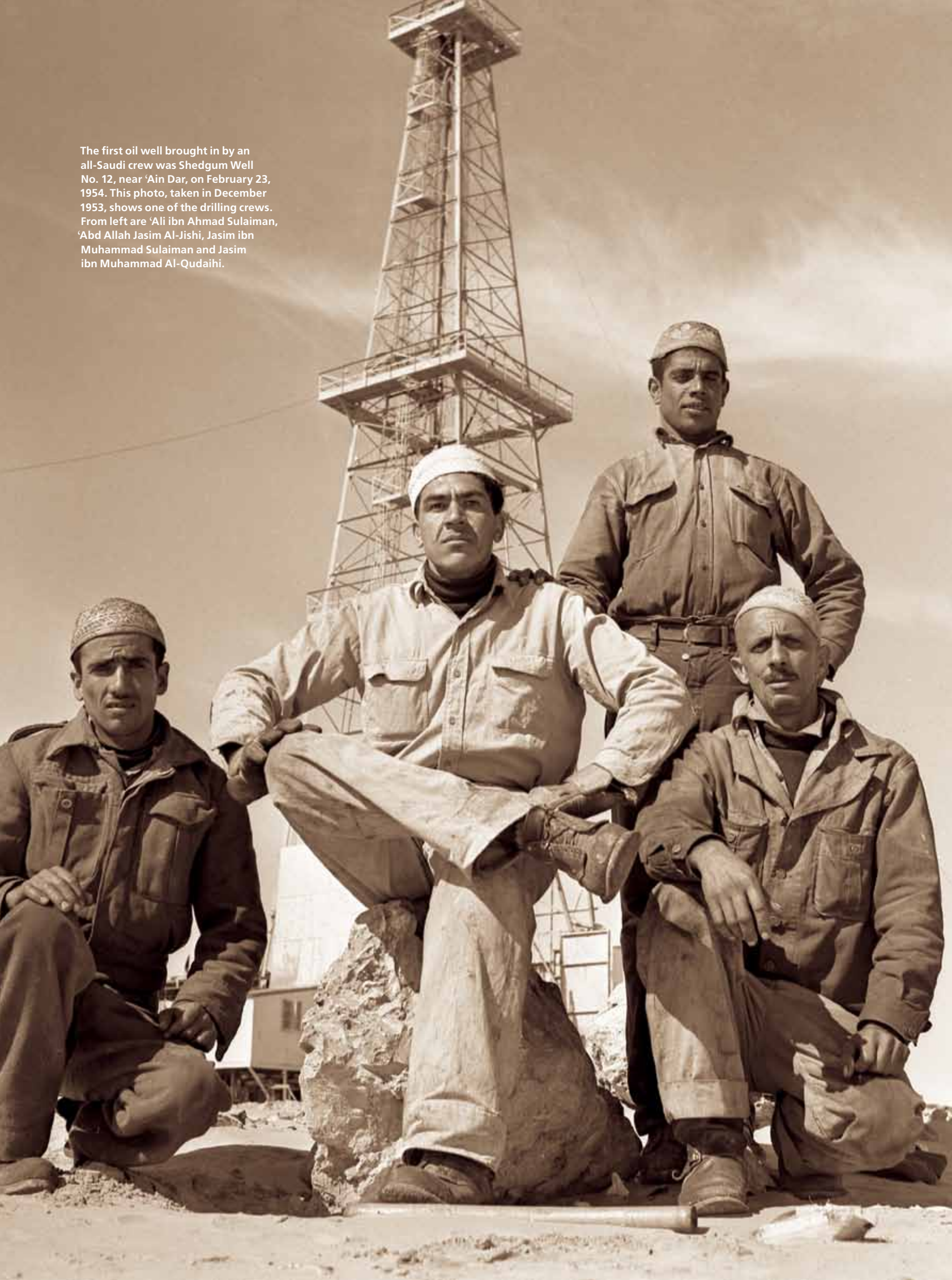
at an Aramco training facility in Riverhead, New York. Listed from left to right are Jasim Jum'ah, 'Abd Al-Rahman Al-Duwaihi, Sa'id Ahmad, Muhammad A. Salamah, 'Abd Al-Noor (chaperone), Khalifah Al-Dowsari and Muhammad Luqman.

# Growing Pains



Dhahran, circa 1947.

The first oil well brought in by an all-Saudi crew was Shedgum Well No. 12, near 'Ain Dar, on February 23, 1954. This photo, taken in December 1953, shows one of the drilling crews. From left are 'Ali ibn Ahmad Sulaiman, 'Abd Allah Jasim Al-Jishi, Jasim ibn Muhammad Sulaiman and Jasim ibn Muhammad Al-Qudaihi.



The slight Bedouin boy stood motionless at the back of the Jabal School in Dhahran. There in the front of the room loomed a giant of a man with wiry red hair sticking out of his head and chin.

His skin, white as camel's milk, was covered with small brown splotches, which crowded around his eyes when he bared his teeth in a smile. The boy finally slid into a chair, careful not to take his eyes off the freckled face. The man held up a picture of an animal with a long nose and made a strange sound: "Fox. This is a fox." Another animal, another sound: "Dog. This is a dog." And then a third animal: "Cat. This is a cat."

Fear, confusion and a few new words, including one that defined all the rest: *English*. That first day's rehearsal of *cat* and *dog* and dozens of other strange-sounding utterances started young Ali Al-Naimi along a path that led him from his family's Bedouin tents to the leadership of Aramco and later to the office of the Minister of Petroleum and Mineral Resources in Riyadh.

In the immediate post-World War II years, Al-Naimi's introduction to a formal education from Aramco was replicated to varying degrees by thousands of Saudis. Even as the company was pouring millions of dollars into dramatically expanding its production and exploration capacity, Aramco also began investing millions to improve the education, training, health-care and entrepreneurial opportunities for its Saudi workforce. These initiatives contributed to the growth of hundreds of Saudi businesses in the ensuing decades and played an important role in the creation of a strong and broad Saudi middle class.

The company realized that investing in the productive capacity of its infrastructure as well as the human capacity of its workforce was vital to retaining its concessionary rights. Aramco did not invent the concept of enlightened self-interest, but it clearly recognized that improving the education and (particularly in the early days) the health of its workers made them more productive as well as improved their quality of life. But the oil company, albeit sometimes only after protests from its Saudi employees or the government, took the concept as far as, if not further than, most other corporations operating in developing societies during the postwar period.

Many Aramco officials felt an obligation beyond the modest stipulations of the concession agreement to make such "soft" investments, even as some wondered whether they would ever see an adequate return on their investment. Yet education and health care were arguably the best investments the company ever made, even if the ultimate payoff did not come for decades.

In addition to contributing significantly to the improvement of living conditions and increasing life spans of Saudi workers and their families, the company's four American shareholders were able to retain their ownership interests in Aramco even after all other Western investors in the Middle Eastern oil industry had lost theirs, due at least in part to such societal investments. The nearly



**Jabal School teacher Fahmi Basrawi stands with his students outside the school in 1946. Second from the right stands his most famous student—Ali I. Al-Naimi, who served as the first Saudi president and CEO of Aramco before being appointed Minister of Petroleum and Mineral Resources.**

seamless transition to Saudi ownership beginning in the 1970s was a testament to the relationships Aramco built with its employees and the Saudi government from the beginning and particularly in the postwar years.

Beginning in the late 1940s, Saudi men and boys joined Aramco in record numbers and had a profound effect on the company's future, and the future of Saudi Arabia. Many of their older male relatives had worked for the oil company as laborers in the 1930s. But in the early 1940s, the company raised the stakes—for both itself and the next generation of Saudis. These men were educated and trained to at least begin to rise through the company ranks. As a consequence, they contributed to the postwar growth of Saudi Arabia's professional class, often because of the opportunities they were given by Aramco to start their own businesses or take over businesses that the oil company had previously been running.

Life was changing for the expatriate community as well. With the frontier days behind it, the company rapidly expanded its workforce and residential communities for Americans and other expatriates and their families. In many ways, Aramco replicated American small-town life with its domestic and community routines while exposing "expat" employees and their families to the often intriguing Saudi culture.

The relationship between the Aramco and Saudi communities was evolving as well. During this time, many Saudi and American workers formed close working relationships that grew into

long-term friendships extending into retirement years. At the same time, the differences in living and working conditions for Saudis and Westerners in the postwar years occasionally led to tension and sometimes confrontations between Saudi employees and the company, though rarely with individual American workers. The Saudi government intervened in a number of disputes and mediated in a way that not only helped improve conditions and wages for Saudi workers, but also contributed to the modernization of labor and industrial laws and regulations for the entire country.

### Arabic for Expats

As a multinational company with English as its official business language, Aramco had to overcome the language barrier between its Western and Saudi employees. It responded to this challenge in 1948 by opening a training facility in Riverhead, New York, where all new American employees attended an intensive two- to four-week training program before being transferred to Saudi Arabia. The trainees learned simple Arabic words and phrases, along with Arab customs, which helped them communicate with Saudis at work and after hours. The instructors, most of whom were Saudi employees on temporary assignment in America, also benefited from the program, attending English-language and other classes during their off hours.

In 1951, Aramco moved the program to a new facility in Sidon, Lebanon, where employees further immersed themselves in Arabic by exploring the surrounding towns. Instructors, who were primarily Palestinians, continued to drill students on several hundred words and phrases that company Arabists felt would be most useful to Americans in their initial months in the field.

For those who were interested, Aramco offered additional instruction once the trainees arrived in Saudi Arabia. Geologist Robert L. Maby Jr., who began working for Aramco in the 1950s, explained, "I took about 12 or 15 more courses, and then when I was out in the field with the people, it all came together. In six months, I could talk work-Arabic." An introductory class was also available for older employees who had not received previous Arabic training. After the Sidon training center closed in 1957, these on-location classes continued providing Arabic instruction into the 1980s.



**The language immersion they experienced once out in the field enabled many Aramco expatriates to acquire a working grasp of Arabic. Saudi employees, in turn, improved their English through regular conversation with American coworkers both on the job and off.**



## Oil Caravan

In March 1951, three company translators proposed an Arabic publication akin to the *Sun and Flare*, as the English newspaper issued by the company was then known. (The English-language company newspaper first appeared July 1, 1945, under the name *The Dust Rag*.) Two years later, in October 1953, their proposal came to life when the first issue of *Qafilat az-Zayt* (*The Oil Caravan*) made its debut.

In addition to articles about Aramco and its employees, the monthly publication featured cultural, scientific and topical articles, usually pertaining to Saudi Arabia and the Arabian Gulf region. As the publication grew more confident and found its voice, prominent Saudi and Arab authors contributed articles. Similar to the void filled by the Aramco television station three years later, *Qafilat az-Zayt* appeared at a time when Arabic publications were few and far between in Saudi Arabia. Many contemporary authors in the Arab world were inspired by *Qafilat az-Zayt* to become writers. For others, the magazine was a source of intellectual fermentation.

In 1959, Aramco decided to divide *Qafilat az-Zayt* into two publications. While maintaining the monthly magazine, the company also produced a weekly newspaper under the same name. The newspaper covered the day-to-day activities of the company and its employees in addition to publishing short articles about topics of interest to employees and their families. The monthly magazine thus had more space to dedicate to longer articles about a wide variety of topics of interest to its much broader audience. Many years later, and to distinguish the two publications from each other even further, the monthly magazine was renamed *Al-Qafilah*, or *The Caravan*, while the weekly became *Al-Qafilah al-Ushbu'iyah*, or *The Weekly Caravan*.

In 2003, on the occasion of the magazine's 50<sup>th</sup> anniversary, one of the magazine's editors at the time, Mohammed A. Al-Osaimi, said the purpose of the magazine is "to project Arab values, which are of vital importance in a new world caught up in a technological and communications revolution and reduced to a global village wracked by cultural, social and economic cross-currents."

The company took the occasion of the magazine's golden anniversary to update its design and reconfigure the content. Khalid F. Altowell, then a staff editor, said, "The revamped magazine still follows the spirit of the old *Qafilat az-Zayt*, but with an innovative perspective and varied cultural approach to technology and society, without neglecting the changing features of modern life."

*Al-Qafilah* remains one of the Arab world's best-known cultural magazines, and more than 75,000 copies of the now bimonthly are distributed free of charge to company employees and to interested readers in the Kingdom and around the world.

**LABOR UNREST** The rapid arrival of material to build the Ras Tanura Refinery starting in 1944 was accompanied by an expansion of the Saudi workforce as well. From the end of 1943 to the end of 1944, the number of Saudi workers nearly tripled to 7,583 from 2,692. Services and facilities were not increased in sync with the boom in employees, however, and tensions mounted as the long, hot summer of 1945 progressed.

Living conditions and wages topped the list of complaints. With a shortage of tents, more workers were crowded into the available accommodations. At Ras Tanura, a strike began in mid-July after a workers' petition, as well as government requests to have worker concerns addressed, were in effect ignored by the company. The strike resulted in a near-total work stoppage among the Saudi laborers for several days. Aramco hurriedly put through modest wage increases for the lower-level workers in particular. Italian workers briefly put down their tools shortly after that in what amounted to a copycat strike.



Mansoor Madani, left, the editor of *Qafilat az-Zayt*, the weekly company newspaper in Arabic, and a press operator check the latest edition at the printing press in al-Khobar in January 1963.

Aramco officials may have thought they had kept a lid on the simmering labor issues, but they were wrong. In early August 1945, the strike resumed, this time in Dhahran as well as Ras Tanura. The nearly 9,000 workers who walked off the job for several days—severely disrupting drilling operations and refinery construction—made it clear that the token raises did not answer their more comprehensive grievances about work, housing conditions and discriminatory treatment compared with foreign workers.

The government in Riyadh agreed with the striking workers and demanded that Aramco, in a first for the company, negotiate with representatives of the workers. After several months, the company agreed to significant improvements in working and living conditions, the construction of concrete block "bachelor" dormitories and a new hospital in Dhahran.

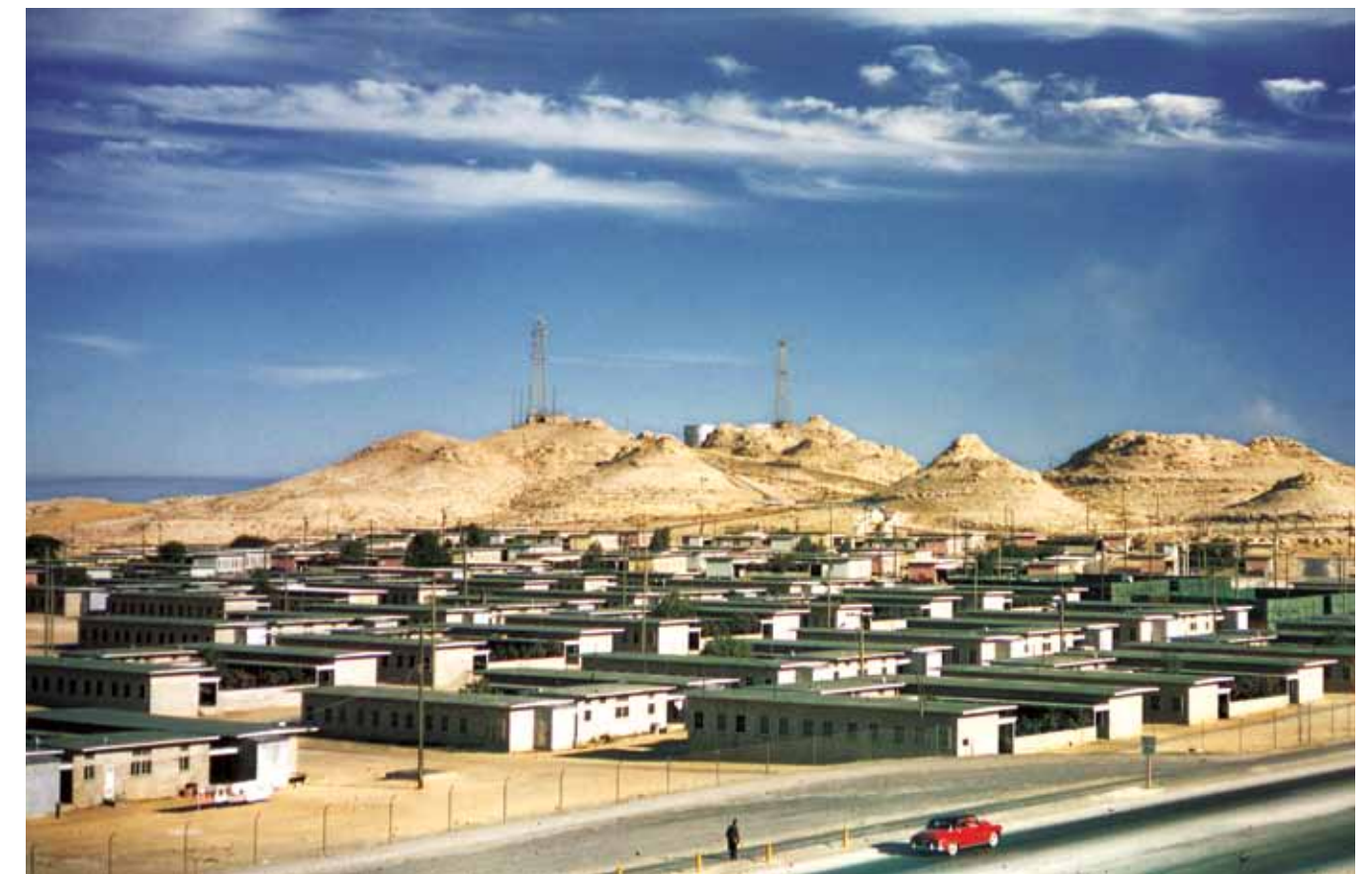
Dormitory housing was a significant improvement over the tents initially provided Saudi workers, and which were still housing some lesser-skilled Saudis into the early 1950s. However, the lack of air conditioning in these early dormitories made them brutally hot during the summer. When not working, many Saudis sat outside in the shade during the day, in hopes of catching a breeze, and pulled their cots outdoors at night to sleep under the stars. At the time, Aramco argued that bachelor housing met its obligations to the Saudi workforce because providing accommodations for Saudi families was considered too expensive. Such facilities were provided for the generally higher-skilled American workforce, though Americans often lived in bachelor quarters for one or two years until family housing became available and their families could join them.

The government committee appointed to review the grievances had supported the workers at nearly every turn, declaring that "the company's treatment of foreigners is superior in all respects to that of the Saudis." The committee noted that many of the Italian workers were being paid more to do "simple and ordinary" jobs that ought to be handled by Saudis. Aramco argued that this was a temporary situation and that the Italians would be assigned higher-skilled work imminently. The committee did not accept that argument: "If things continue the way they are, the day will come when foreigners will occupy all jobs under this pretext."



'Abd Allah Muhammad and Omar Abu Hijlah join Salih Sa'd Al-Zaid, seated on the left, for coffee in his newly built quarters in 1952. The concrete-block walls and glazed windows offered more protection from the elements, though the lack of air conditioning remained a point of contention.

Dormitories lie at the feet of Dhahran's *jabals* in this 1950s view of Intermediate Camp. In 1950, Aramco established three job categories: senior, intermediate and general, with the job, not nationality, determining an employee's eligibility for housing and recreational facilities.



## Royal Visit

For only the second and what proved to be the last time in his life, King 'Abd al-'Aziz visited Aramco's communities and oil operations in January 1947. Eight years after turning the valve to inaugurate the flow of oil to the first tanker at Ras Tanura, the founding King returned to find oil operations dramatically transformed in size and scope. In his previous visit, King 'Abd al-'Aziz had arrived in Dhahran in a caravan of hundreds of cars that had to negotiate desert tracks and dirt roads. Symbolizing the rapid modernization of Saudi Arabia funded by its burgeoning oil industry, this time the King and his entourage arrived at the Dhahran air base in six twin-engine Douglas planes flying in formation.

Driving past an oil stabilizer plant on the Dammam Dome, where more than 30 wells were in operation (compared to fewer than a dozen during his first visit), the King summed up his impressions of Aramco's accomplishments, most of which had been made in the few short years since the war's end: "A great enterprise, may God help you in handling it."

The five-day royal visit represented one of the high points in the careers of many Saudis and expatriate workers alike, as well as their families. Some labor unrest occurred in 1945, and flared up again a few months after the King's visit, but employees of every rank and nationality appeared to genuinely appreciate the monarch's visit. While touring the area, King 'Abd al-'Aziz was pleased to observe many of the more than 7,100 Saudi workers now engaged in more skilled positions, from the garage and machine shop to refining. (Reflecting the rampant growth of Aramco, the ranks of Saudi employees swelled to 12,018 by the end of the year.) In addition to greeting the long procession of local and regional Saudi dignitaries, as well as the *Shaykh* of Bahrain, the King also met with employee representatives, including the already legendary guide, Khamis ibn Rimthan. Another employee, Husain Khazindar, addressed King 'Abd al-'Aziz on behalf of Saudi employees. An Indian employee, Muhammad Ishaq, spoke on behalf of the company's Muslim Indian employees, as they were known prior to the partition of India and Pakistan.

Wives and children of expatriates had an opportunity to meet the King at a special reception held on the tennis courts in the Dhahran company compound. Though Saudi custom limits mixed-gender gatherings, the King showed his support for the expatriate families and their contribution to the success of Aramco by smiling and shaking the hand of every woman and child who approached him. Many understood that it was a historical moment. Carol DuPriest Houg, one of the first five women to arrive in Dhahran in 1946, recalled the King's visit years later:

At the same time, the government recognized that the burden of increased production was straining the company, and it expressed confidence that Aramco could fix the problems on its own. The committee concluded that it trusted Aramco to alter such discriminatory practices, "which have formerly taken place in some instances as a result of increased operations and that everything liable to cause friction and misunderstanding will be eliminated."

In May 1947, labor unrest once again rocked the oil camps. This time, the nearly 800 Italian workers did not show up for work, citing poor wages and living conditions at their tent camp on the beach at al-'Aziziyah, near al-Khobar. Aramco's general manager of production, Philip McConnell, recorded his reaction to the strike in a diary. His thoughts were revealing: Like many of his fellow American managers, he showed genuine sympathy for the strikers. Yet he and the other Americans were not able to fully comprehend that workers of any nationality would likely bridle at such conditions, especially when they could see how the Americans were living nearby:



The King was a wonderful man. He was so tall and handsome. When he spoke it was as if the voice carried across the whole yard and yet, it was soft though full of authority. His word was absolute law. ... I remember to this day the big wonderful smile and a great feeling of warmth and protection from this man who I had been told was a great warrior. He gave me a string of pearls that day and I still have them. I can still feel his strength whenever I put them on.

On May 20, 2008, as part of the company's celebration of the 75<sup>th</sup> anniversary of the signing of the concession agreement, King 'Abd Allah, 'Abd al-'Aziz's son, visited Dhahran and met with 29 of the same children who had met his father in 1947; he expressed his thanks for their parents' help in Aramco's early days.

King 'Abd al-'Aziz demonstrated his support for expatriate families with a special reception for women and children in Dhahran on January 25, 1947. Also on the dais, on the King's right, are Aramco executives James MacPherson and T. "Vic" Stapleton, and on his left, U.S. Consul Waldo Bailey.

Now the sad part of this strike is that the men do live under unsatisfactory conditions so far as the average Italian is concerned: They do live in tents, without satisfactory hospital facilities, without many of the small comforts we would like to give them. From an American standard, their wages are low. But these conditions were the basis on which the Italians could come to work for us—and the conditions were imposed by the SAG [Saudi Arabian government] not by Aramco. The big howl of SAG, even now, is that we pay the Italians more than Arabs who do similar work. Furthermore, the Government reluctantly allowed them into this country on the strict understanding that they would be given no better living conditions than the Arabs. We had to chisel to give them what we have, and the Arabs constantly are complaining about the better treatment afforded the Italians.

Italian workers resigned en masse after Aramco refused to negotiate and fired 35 workers identified as ringleaders. Resignation was a symbolic move for many of the Italian workers and

they later reconsidered. But about 40 percent of the workers were repatriated to Italy. Aramco may have silenced this particular cohort, but the company's labor troubles were far from over.

**A FRAYING RELATIONSHIP** By 1948, Aramco officials were agonizing over an increasingly strained relationship with the Saudi government. On the surface, Aramco was fulfilling the fiscal requirements of its agreements with the government. Indeed, rapidly increasing company profits translated directly into increasing revenue for the Saudi government. In 1948, the government received approximately \$30 million in royalty payments in addition to a onetime royalty settlement of \$18 million. The \$30 million in royalty payments was a dramatic increase from the \$12 million and \$19 million payments received in 1946 and 1947, respectively. However, increased revenues prompted raised expectations—both in terms of income as well as the work and living standards of the company's Saudi employees. At a three-day planning session called by Government Relations in October 1948 in the Pocono Mountains of eastern Pennsylvania, the issue was addressed head-on in an official memorandum:

The Company today is faced with a problem of great magnitude and of far-reaching importance. It is not in good standing with the Saudi Arab Government, nor does it enjoy the confidence which heretofore has characterized its relations. Mr. Ohliger [Floyd Ohliger, general manager in Dhahran] feels no other conclusion can be reached after viewing the overall picture. The recent visit of the Finance Minister has made us acutely aware of the lengths to which the Government will go to demonstrate its present displeasure. The Government appears ready to believe the attacks being made on the company by the United States press, the Brewster Committee [the U.S. Senate committee that investigated claims against Aramco and the oil industry's ties to the wartime Roosevelt administration], and by columnists.

The attacks mentioned in the memorandum referred primarily to allegations, later proven unsubstantiated, aired in U.S. Senate committee hearings in the late 1940s. Testimony concerned reports that Aramco had overcharged the U.S. Navy for oil, and had paid the former head of Bapco, James A. Moffett, to unduly influence President Roosevelt during World War II, thus granting Aramco favorable treatment and saving the company millions of dollars. Navy officials testified that in fact they received a competitive price from Aramco. Moffett claimed that Aramco owed him \$6 million for his services and took up his case in U.S. District Court. The jury awarded him \$1.15 million only to have the presiding judge set the verdict aside due to lack of evidence and the noncompensable nature of the contract. Moffett appealed this decision only to have it quickly dismissed. He even tried to take his case as far as the U.S. Supreme Court, but in 1951 the court declined to hear the case. Yet the widely publicized allegations were discussed in the Middle East as evidence that Aramco, and big oil companies in general, were taking advantage of the governments and populations of the countries in which they operated, and therefore had to be monitored very closely.

In 1948, housing (family housing in particular), community development and education topped the agenda of the Relations Department. Minutes from the October meeting in Pennsylvania, under the category of "constructive development of the good relations with SAG (Saudi Arab government) and with the people of Saudi Arabia," produced the following statement:

Pressure from the Government for better housing was again exerted during the visit of Shaikh Abdulla Sulayman and Shaikh Yusuf Yassin to Dhahran in May and June. ... Both Shaikh Abdulla and Shaikh Yusuf pressed the point that the living conditions of the Arab employees must approach that provided for the Americans. The discussions in this respect went much further than they ever have before. They told us that we should plan our camp layouts so that eventually senior Arab family housing will merge into the American camp. ...



Abqaiq in the 1940s was little more than a collection of portable houses set against a stark landscape. Over time, Abqaiq grew to provide many of the comforts of Dhahran and Ras Tanura.

The Government is becoming more and more conscious of what is done in other countries. The precedents which have been established at Abadan [in Iran] and Kirkuk [in Iraq] may set a pattern which we will be forced to follow. Photographs of the very extensive family quarters already constructed and under construction at Abadan and Kirkuk, published in recent trade journals, will undoubtedly come to the Government's attention, and emphasize the absence of family housing in our operational areas. While the Government has given its preliminary approval to the proposed program of building loans to employees, it seems quite clear from the comments made at the May-June meetings that this program will not answer the pressure for family housing.

## Home Improvements

One of the first people to experience the sting of the disparities in housing was Bishara Daoud, the college-educated Lebanese hired in 1939 as a teacher and an interpreter. He could not live on the American camp or shop in its commissary. Given special privileges in Saudi camp, he was resented by the other residents. Daoud, unhappy with the situation, returned to Beirut after only two months in Dhahran.

A decade later, the circumstances were beginning to change. Peter Speers, who joined the Relations Department in Dhahran in 1950, had studied Arabic and lived abroad before joining Aramco. From his perspective, most American employees did not object to the very gradual integration of housing that was under way. However, there were some exceptions:

When I arrived in Dhahran in 1950, it was a strictly segregated community after working hours. Only Americans and their families lived there and others who worked there left at the end of the work day. Later that year the company decided to open up Dhahran housing and other facilities on the basis of job level instead of nationality. This meant that some Arabs and other non-American groups would be assigned houses and allowed to use the commissary, the movie theater, and so on. This was no big deal at the time, since there were not many people who qualified, but even so there was opposition among some Americans. I remember eating dinner one night in the dining hall with four or five other people and listening to one guy at the table who was telling us that he wasn't going to sit around and eat at the same table with no Ayrab, and if they were allowed in he was going to leave. He left. There continued to be individuals like him in the community, of course, but my impression is that they were few and far between and had little influence.



As the company expanded in the postwar era, housing conditions improved for expatriates but lagged behind for Saudis. This photo, from Ras Tanura, was taken in the early 1950s.

## Letters Home

Ken Webster, an engineer with The Texas Company, joined Aramco in July 1944 and arrived in Ras Tanura that October as supervisor of construction for the new refinery being built on an expedited basis. His wife, Mildred, known as Mimi, and two daughters, Susan and Judy, arrived in Ras Tanura in March 1946. They were among the first expatriate families to live in the company compound there, about 11 kilometers from the refinery. Mildred's letters home to her parents offer a snapshot of postwar expatriate life in Saudi Arabia:

Sisters Susan and Judy Webster get a firsthand glimpse of tradition and technology on the sands of Ras Tanura in 1946.



### Ras Tanura

April 23, 1946

... stopped by Dr. Flood's on our way home. His wife and two-year-old son arrived on the plane with all the others and the nurses had a party for them at the Floods' apartment. Bill Flood had never seen his baby. "Dotty," his wife, is as cute as a button. I'll see all the others today—the more the merrier!

We now have 9 children and 12 wives—5 stenos and 12 nurses—plus 3 wives and one child 7 miles away at the Terminal. Quite a gathering.

We were so happy to have the letters last night ... and thanks for the pictures.

Ken left early for Dhahran. Will be back for dinner. It is such a grinding trip and he goes often, but it won't be much longer now that he will have to go. He and two others are making a survey of every department and every man. Then he'll return to his own job—Superintendent of Construction and Maintenance.

### Dhahran

June 2, 1946

I've sort of lost track of the time, but I'm sure it is time to write again.

We've had a busy week here—there always seems to be something going on!

Ken has been too busy to do anything much but work. He goes back (to Ras Tanura) every evening. It is all new to him and is a very big job, so he is trying to keep up. I am sure he can handle it and will do fine. He just had word he received a very substantial raise—all such gladly received.

I don't know whether this borrowing him temporarily will work into something else or not and whether we will be kept down here. I really like it better in Ras Tanura, but wouldn't mind living here.

Judy loves the school, but they will have one up there (in Ras Tanura) by September. She just had a report card—all A's, except B in Physical Education. She says it's too hot to play games outside. They have a wonderful young man for a teacher (Mr. Whipple) and he's so enthusiastic and works hard.



Employees depart Ras Tanura for an excursion to nearby Tarut Island in 1952. Expatriate employees frequently visited historic sites in the Eastern Province and around the Kingdom.



Elizabeth Arnot shops for produce, much of which came from Lebanon and Jordan, in the Dhahran commissary in 1954. Life in the postwar era was more comfortable for expatriate employees than for Saudis, yet life in Dhahran was not exactly like "back home" either.

The Government Relations staff reported at the Pennsylvania meeting that the government appeared satisfied with the improvements in housing for lower-level employees. One staffer noted that during their spring visits to Dhahran the Saudi ministers appeared "quite happy with the permanent dormitories now being built for the workmen. I think that they will be similarly happy with the senior Arab bachelor quarters which are now under construction. We must, however, provide many more of the latter than are presently planned, and supporting facilities such as landscaping, recreation and sports grounds, reading rooms and libraries must also be provided."

In 1950, Aramco adopted new terminologies for its employee camps to lessen the appearance of segregation by nationality. Through the immediate postwar years, workers were either in the American camp or the Saudi or native camp. New terms were needed to answer Saudi worker and government complaints about segregation and to reflect the grouping of employees by skill level. Aramco settled on "general camp" for the lower-level employees, "intermediate camp" for the semiskilled laborers and "senior staff camp," which as late as 1950 was still almost 100 percent American or European.

Aramco's plan to make home loans to qualifying Saudi employees, which was discussed with the government beginning in 1948, became a reality in 1951 with the creation of its Home Ownership Program. The government provided the land, which the company developed with roads and utilities such as sewers, water and electricity.



Aramcons and their families disembark from the *Flying Camel*, a company-owned DC-6B, at the Dhahran airfield in the heat of August 1958. The *Flying Camel* and its sisters, the *Gazelle* and the *Oryx* (a DC-4), made regular trips from New York to Dhahran, covering the nearly 13,000 kilometers in about 30 hours' flying time, until replaced by commercial service in early 1961.



Surrounded by the half-completed homes of the Madinat-Abqaiq development, Ralph Tufley, from Aramco's Home Ownership Program, meets with contractors Muhammad Al-Khatib and Hamad Abu Nahyah to discuss construction progress in 1958.

This and all other human resource programs were soon put to the test by the nationalization of the Anglo-Iranian Oil Company and the Korean War, both of which placed increased pressure on Aramco to produce more oil. As a result, the company's workforce swelled to more than 24,000 in 1951, a number that was not reached again until 1977.

The Home Ownership Program was initiated just in time to meet the surge of employees. By the close of 1958, Aramco had built or financed 1,323 family homes for Saudi employees through the Home Ownership Program.

Simply put, through most of the late 1940s and early '50s the increased demand for production combined with growing Saudi impatience on the human resources front left Aramco with too much on its plate. As a result, housing improvements tended to lag behind profit-generating improvements. Hamad A. Juraifani, who later rose through the Aramco ranks to become vice president of Corporate Planning, arrived in Ras Tanura in September 1951. The disparity in housing, and its link to nationality, seemed obvious to him at the time: "They [Americans] had the community, you know, with the nice houses and so on, on the beach. And they housed the expatriates. The Saudis, they were divided into two levels. Those that are higher grades are put into homes with fans, but no air conditioners. And the rest are put in tents. And I remember, four people to a tent."

**SMALL-TOWN AMERICA** Visitors to Dhahran and the other largely American expatriate communities during the 1950s were invariably struck by the degree to which they replicated the look and feel of small-town America. Parades were held on major holidays. Modest, air-conditioned family homes with screened porches lined gently curving streets. It was years before lush lawns took root in the communities, but flowering bushes and trees turned the expatriate communities into oases in their own right.

In Dhahran, where the expatriate community numbered roughly 1,400 by 1949 (another 1,000 expatriates lived in Ras Tanura, 900 in Abqaiq, and 300 were scattered among other sites), social life centered around the community swimming pool, the first in Saudi Arabia, and the social club, theater and bowling alley. There were tennis courts and a baseball diamond, while the nine-hole sand golf course lay just outside the community fence. Many expatriates stabled horses at the nearby Hobby Farm after the war.



Jabal School students listen intently to their teacher in 1948. Though the Saudi government soon demanded that the school dismiss all of its younger students, the years of education they received aided in their advancement within Aramco and elsewhere.

## One-Room Schoolhouse

Schools were a particular focus of camp life for expatriates. Before the war, the handful of children of school age in the camp had been taught briefly in a makeshift school in the Steinekes' house, with Mrs. Edith Chamberlin presiding. As American women and children started arriving in significant numbers after the war, the company invested in school buildings and professional educators for the growing communities.

In 1945, a 29-year-old ex-serviceman named Sam Whipple was living in Los Angeles. A teacher before the war, he answered an ad in the *Los Angeles Times* for a teaching job overseas. When he got to the interview, he learned that the job was in Saudi Arabia: He would be the only teacher in a one-room kindergarten-through-eighth-grade school, which he also had to set up once he got there. His \$300-a-month salary included "hardship pay" of \$50.



Whipple arrived in Dhahran in June and was to have the school, originally located in the living room of a duplex house in the senior staff camp, open by October 1. Short of supplies, he had to go to the school in Bahrain run by Bapco to borrow books. The only student to show up the first day was Steve Furman, son of the head of Aramco's commissary in Dhahran. Thirteen students were enrolled by the end of the first year.

Whipple moved to Ras Tanura in 1946 to open the first senior staff school for expatriate children there. More teachers and students were added over the next few years in both camps. In September 1946, workmen completed a two-room school in Dhahran, the first building in the camp built specifically as a school. Over the years, it was used for several purposes, and today it forms the front section of the Dhahran Recreation Library. A school for children of expatriate workers opened in Abqaiq in 1947 in a private home, moving to a portable building the following year.

School is in session in Ras Tanura, October 1946, led by teacher Sam Whipple. On Whipple's right, beginning with the boy closest to him, are Ron Brown, Nan Cooper and Lee Taylor. On his left, beginning with the girl closest to him, are Marilyn Bunyan, Bill Tracy, Mollie Kennedy and Joyce Butler.

## Educational Vision

Aramco's efforts to help educate the Saudi people were not limited to the schoolroom. The company commissioned educational films to teach Saudis life skills and public health. In 1948, Aramco commissioned Graham Associates, an American design firm run by brothers Roy and Ray Graham, to create *Miyah—A Story of Water*. *Miyah* was Aramco's first educational film for Saudis, which taught farmers water conservation techniques. Before it could be released, Aramco had to solve the dilemma of how to share *Miyah* with its intended audience. The only movie theaters in the country were in Western compounds, and regular television broadcasting did not exist. In place of these communication channels, Aramco trucked portable screens and generators across the desert. These mobile outdoor theaters, temporarily erected in village squares, brought *Miyah* to many Saudis who had never before seen a moving picture.

Aramco was pleased by the movie's success and quickly commissioned more educational films. Over the next 14 years, the Graham brothers produced nearly 40 for the oil company, ranging from short public health education films such as *The Fly—Carrier of Disease* to the full-length epic *Island of Allah*, which captured the rise of King 'Abd al-'Aziz and used Aramcos as actors. *Island of Allah* was released on a limited basis in Western theaters.

Ray Graham also worked with Aramco designing its print publications, including the annual *Report of Operations* and the company newsletter, which eventually became *Saudi Aramco World*. He left to found his own company in the late 1940s but continued to fill Aramco's graphic design needs through Middle East Export Press, a Graham Associates subsidiary. He and his brother, Roy, together created educational exhibits that were sent to international fairs and toured Saudi Arabia in traveling tents. These exceptionally popular displays played a vital role in educating viewers about the oil company both locally and abroad.

On the 1953 film set of *Island of Allah*, Aramcos dressed as Saudi warriors scale the walls of Hofuf (standing in for Riyadh) to recreate King 'Abd al-'Aziz's historic recapture of his father's capital in 1902. Though the story was well-known to Saudis, the film provided a vehicle for introducing the saga to audiences both in Aramco's expatriate communities and abroad.



*Life* magazine, placing the Aramco communities in the context of post-World War II geopolitics in a 1949 article, described the oil facilities and communities as serving the Cold War effort by demonstrating the positive aspects of the American way of life to developing nations, thus countering the Soviet influence in the region: "Aramco in its larger aspects could be a prototype of the kind of thing President Truman had in mind in his 'bold new program' of American guidance for 'underdeveloped areas.'"

While the Americans and other expatriates did their best to bring a bit of home to the desert, not everyone was suited to working and living in such isolated conditions amid a foreign culture. The move could be especially hard on spouses and children. Those who stayed and thrived tended to embrace a can-do spirit and the sense of community among expatriates—there was little socializing between the Western and Saudi communities during this period—with domestic life revolving around school, socializing and recreation.



**ABQAIQ PIONEERS** Life in Ras Tanura and Dhahran in the early postwar years may have had its challenges for expatriate families, but it was fairly luxurious compared to conditions in smaller, outlying Aramco expatriate communities. Paul Arnot was asked to move from Dhahran to Abqaiq to be drilling superintendent and area administrator in late 1946. He moved his wife, Elizabeth, a registered nurse, and their six-week-old daughter, Anne, in February 1947. They were the first expatriate family to reside in the landlocked community approximately 70 kilometers southwest of Dhahran, following expatriate "bachelors" already residing in dormitory housing. As Elizabeth recalled years later:

We moved into the first house that was finished, and as we moved in, they were putting up the curtain brackets and doing finishing, and the Arabs were absolutely astounded. Many of them had never seen a white woman, much less one with her face completely uncovered, and I had Anne in a wooden Dutch Cleanser box. When they heard the baby cry they really got excited. So they unloaded all of our stuff and they carried kitchen stuff into the bathroom, and other stuff into the kitchen. It was a great sorting out, but we finally got settled. ...

There was no distilled water, the raw [non-desalinated] water was awful. ... Every week Paul would go to Dhahran to buy ... groceries in the commissary and bring back big gallon jugs of water. It was much later in the year before we got water that was fairly drinkable. ...

One time, I was hanging the diapers on the line, and the goats [belonging to passing Bedouins] came up, began to nip away at them.

Taking a break from their studies, students play in front of the newly constructed 300-pupil elementary school at Madinat-Abqaiq. Completed in November 1959, the school was the last of the first group of 10 built by Aramco to educate the sons of its Saudi employees as part of the company's school building program.

**EVOLVING SAUDI EDUCATION** By 1944, the company had opened a school for Saudi boys in Ras Tanura, complementing the handful of schools educating Saudi boys in Dhahran. An American school administrator, G. McLean "Mac" Nearpass, had arrived from the United States in 1944 to direct the company-wide education program for both Saudi and expatriate students. The emphasis on educating Saudi boys was not a matter of convenience. As former Government Relations employee William Mulligan noted in an unpublished 1973 article on the early schools:

It hadn't taken the American oil men long to figure out that the complexities of the oil business were only going to be mastered by men with full educations and that the only Saudi Arabs who had a proper chance to obtain full educations were the young ones. From the start, the Jebel School was for boys, not men. Some of the boys worked part-time as office boys, some were the sons of employees, some were just boys who met the minimum standards of availability, health and a desire to learn.

Along with boys such as Ali Al-Naimi and Nassir Ajmi, several boys from al-Khobar attended the school and later rose through the ranks at Aramco or started their own businesses as contractors to the oil company. Ali Al-Baluchi, who later served as General Manager of Community Services, began attending the Jabal School after work with a group of boys that included Saif Al-Husseini, 'Abd al-Rahman Al-Dosari, Ahmad Al-Dosari, Khaled Al-Dosari, Sulaiman Al-Gusaibi and Khalifah 'Eid.

The Jabal School was renamed the Arab Preparatory School in 1946, and its name was changed to the Arab Trade Preparatory School in 1947. Despite the name changes, it was still commonly referred to as the Jabal School.

'Abd al-Hafiz Nawwab, one of the first teachers at the school, was the first college-educated Saudi hired by Aramco. He joined the company in 1936 as a chemist with a bachelor of science degree and had learned English in India, where his father had served as a religious official. One of Nawwab's pupils was his younger cousin Ismail, who left Aramco and established himself as a respected scholar at the University of Edinburgh before returning in 1977 to lead the company's Public Relations Department and later its Public Affairs organization. Tragically, the elder Nawwab's career as an educator was cut short by illness. He was the first Saudi to be admitted to the American hospital in Dhahran for treatment, before dying at a relatively young age in June 1945.

Another popular teacher, Fahmi Basrawi, who taught himself English, was considered an excellent instructor and also was remembered fondly by his students for his enthusiasm for American sports, including baseball and volleyball. Nearpass had introduced sports to the curriculum to emphasize teamwork among the boys. Basrawi later became famous across much of the Eastern Province for his teaching programs, which appeared on Aramco's television station beginning in 1957. Helping with teaching were a handful of American oilmen who believed in Saudi education, including Barger. The company also added Islamic religious instructors, assigned by the government. They were *Shaykh* Hamad Al-Jasir, founder and first editor of the weekly magazine *al-Yamamah* of Riyadh, and Shaykh 'Abd Allah Al-Malhouq, who later served as the Saudi ambassador to Sudan.

By the fall semester of that year, enrollment was back up to 129 students and rising. Among the students was Al-Naimi, who later recalled he went to a local doctor asking for a certificate stating he was old enough to work and go to school. "He said, 'Why do you insist you are older than you are?' I said, 'Because I need a job and need to work to take care of my family and go to school.'" The boy convinced the doctor and, aged appropriately, was allowed back into the school.

Aramco phased out the Jabal School by 1950, leaving education to Saudi authorities. The school was relatively short-lived, but its significance far outlasted its existence. Leaders of the first generation of Saudis to come of age following World War II had received several years of education at a time when they were able to soak up nearly everything they were taught. The lessons served them well in the decades ahead. Meantime, most boys who had been at the Jabal School continued at Aramco's Advanced Industrial Training Center.

## Emerging Higher Education

When King 'Abd al-'Aziz established the Kingdom of Saudi Arabia in 1932, the nation contained a patchwork of religious and private schools, but no institutions of higher learning. Though the schools were soon standardized by the Directorate of Education, they remained simple, elementary and religious in character. The first colleges of higher education, which emerged in the late 1940s and early 1950s, followed the religious trend. Students at the College of Shari'ah, now the Umm al-Qura University in Makkah, and the College of Arabic Language, now part of the Imam Muhammad ibn Sa'ud University in Riyadh, followed a classical curriculum that focused on the study of Arabic language, the Quran and Islamic jurisprudence.

Recognizing the demand for Saudis conversant in modern technological and business concepts, the government established the University of Riyadh, now King Sa'ud University, in 1957. This university and later similar institutions taught arts, sciences and humanities. The University of Riyadh initially offered only a bachelor of arts degree, but within 10 years expanded to include agriculture, commerce, education, engineering, science and pharmacology.

Other schools followed. The College of Petroleum and Minerals, now King Fahd University of Petroleum and Minerals, opened in Dhahran in 1964 on land released by Aramco with a highly technical curriculum focused on preparing young Saudis for entrance into the petroleum industry. In 1967, a group of businessmen opened the country's first private university, King Abdulaziz University in Jiddah, to teach courses in arts, sciences, commerce and administration. By 1975, when a separate Ministry of Higher Education was created to handle college and university affairs, Saudi Arabia's eight universities had more than 25,000 students enrolled. Today, Saudi Arabia has 25 universities covering almost all of Saudi Arabia's geographic expanse.



Students conduct chemistry experiments inside the temporary lab of the College of Petroleum and Minerals in March 1965. Recognizing the value of a nearby source of technically trained Saudis, Aramco provided both land and extensive financial support to the nascent school.

The Saudi government was not happy that the company had shuttered the Jabal School and had decided on its own to stop providing elementary education to children of its employees. In July 1951, the company representative in Jiddah received a blistering critique from Minister of Finance Al-Sulayman. The letter concluded:

The Labor & Workmen Regulations require the Company to open schools for the education of the workmen's children, and education cannot be limited to some workmen learning trades only. Also the company has taken this step transferring their schools to trade schools before receiving the Government's final approval and so contradicted the aim sought in establishing the schools. The Company has therefore to open promptly an elementary school in Dhahran managed by the Education Directorate due to Dhahran's need of this school, with advice to us.

Aramco officials replied that they wanted to discuss the issue with the government or "even better, to meet in Dhahran where Government and Company representatives can together inspect the schools in the area of our operations." As a company review of its education program written in 1967 noted, "With the above exchange, the wheels were set in motion for the two parties to settle on arrangements that would be acceptable to both and to the Saudi employees concerned."

A committee of company and regional government officials was formed to explore the need for primary education in the al-Hasa region. No one disputed that the need was dire. The government estimated the population of the region at 200,000, and there were only 18 schools, whose total enrollment was less than 5,000, between Jubail and Hofuf. The director of education for the





After 14 years of working for Aramco, instructor Ahmad 'Isa Al-Mausalli was well equipped to teach Aramco's more recent Saudi hires the intricacies of working at the Dhahran stabilizer. On-the-job training remained an important part of the Aramco instructional process even after the rise of more formalized Industrial Training Centers in the mid-1950s.

province put the demand for enrollment at more than twice that figure. The typical schools at the time were in rented houses made of mudbrick, which were "badly overcrowded, understaffed, and were seriously lacking in basic equipment," according to the internal Aramco review of its education program. Negotiations went back and forth through 1952, as the government pushed for Aramco to build schools for the sons of Saudi workers, and the oil company tried to define the scope of the need, including how it could build schools for employees' sons but not other pupils, and limit its potential expenditures.

In January 1953, Crown Prince Sa'ud arrived in the Eastern Province for a three-week tour, with Aramco employee issues high on his agenda. King 'Abd al-'Aziz, who passed away later that year, was seriously ill by that time and the Crown Prince was shouldering an increasing amount of the royal workload. He demanded settlement of the education issue. On January 25, the company-government committee reached an agreement in principle. Aramco consented, among other things, to build schools, beginning as soon as practical, to accommodate a number of students equal to the number of employees' school-aged sons. Employees' sons were accepted into government-built schools in areas lacking Aramco-built schools. Aramco also agreed to contribute to the regional education budget to cover the operating costs of the schools, as long as the government would operate the schools, choose the curriculum and hire teachers.

The company-government committee determined that Aramco was obliged to provide schools to accommodate roughly 2,400 students. The company decided to build 10 schools between Rahimah, near Ras Tanura in the north, and Hofuf, at the heart of the al-Hasa oasis in the south, with four schools large enough to accommodate 300 students and six schools for 200 students each. By April 1953, parcels of land in al-Khobar and Dammam were identified as locations for the first two Aramco-built schools.



Harry Snyder, the architect of Aramco's earliest Saudization efforts, and Arnold Satterthwait bid farewell to Yousuf Ibrahim, Ibrahim Faraj and Said Majid as they board a company airplane in New York bound for home in the 1950s. The three were instructors at Aramco's Riverhead, New York, training facility.



On November 27, 1954, Aramco turned over to the Saudi government the first school, located in Dammam. By the end of 1955, six schools had been completed, in the communities close to Dhahran and Ras Tanura. The 10<sup>th</sup> school was completed in 1959. There were some setbacks: One school had to be substantially rebuilt to correct a contractor's faulty workmanship, and Aramco and the government disputed the placement of the final few schools. In general, though, the educational partnership created in the 1950s between the company and government served as a template as the school-building program expanded significantly over the following decades. The program also provided a means by which the company could advocate girls' education in the coming decade.

A geologist and lab assistant perform tests in Aramco's Dhahran chemical laboratory in 1950. Throughout the late 1940s and early 1950s, thousands of Saudis benefited from a mixture of on-the-job training and classroom instruction designed to increase technical competence.

**REVAMPING THE TRAINING PROGRAM** Even as the Jabal School was winding down in the late 1940s, training was ramping up. During 1948, 2,372 Saudis received trade and industrial training through Aramco, compared with only 171 in 1947. However, little of that training involved preparation for truly skilled labor.

In fact, after operating in Saudi Arabia for 15 years, Aramco had trained and promoted very few Saudis, even to the level of skilled craftsman. By 1949, nearly 85 percent of the company's 10,000 Saudi employees were unskilled, illiterate laborers on the bottom three rungs of Aramco's grade-code ladder. Most of the rest were semiskilled workers with low grade codes. Only 80 Saudis had reached the journeyman or skilled craftsman level of grade-code 6 or above. Every American had senior staff status and, with a few exceptions such as teachers, most were grade-code 10 or higher. It was time to revamp Aramco's training program, and Harry R. Snyder was just the man for the job.



Aramco officials were required to make frequent calls on the governor of the Eastern Province, Amir Sa'ud ibn Jiluwi, seen here in 1950, to obtain approval for educational and other programs. Ibn Jiluwi's relationship with Aramco dated back to the early days of Casoc exploration, when he provided the first geologists with guides and guards.

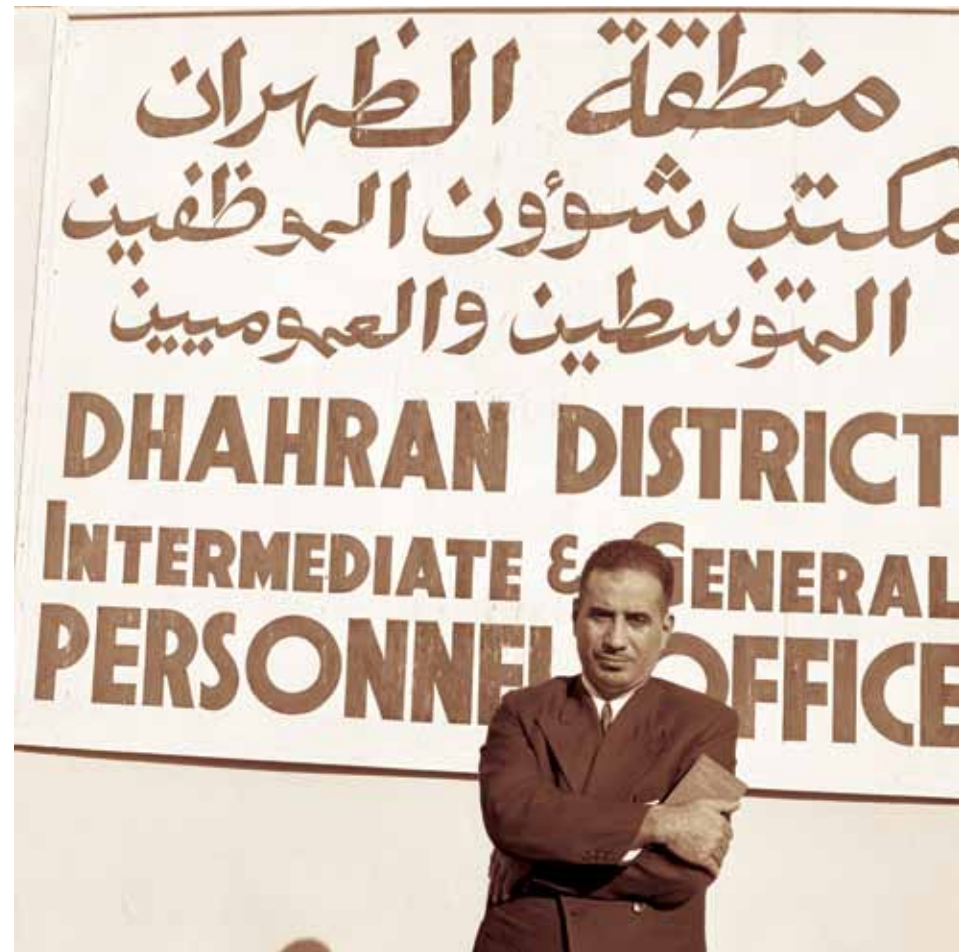
'Abd Al-Aziz ibn Ahmad Buday, an Aramco personnel counselor for the Dhahran district, stands outside the office in 1954. Saudis working in Personnel were better placed than most to call for improvements in working conditions following the 1953 labor unrest.

Snyder, considered an expert on Arab culture, arrived in Dhahran in February 1949 with the newly created title of director of Education and Arab Training. The former college-textbook editor and instructor at the American University of Beirut arrived well versed in Aramco's education and training efforts: He had been a member of a consulting team from the Near East College Association of Beirut, which the company had brought in almost two years earlier to review Aramco's efforts. The group had recommended the creation of a technical and professional institute in Dhahran to train Saudis in the oil business under American direction.

Snyder's goal in 1949 was simple and straightforward: Fifty percent of the Saudi workforce would qualify as semiskilled or skilled labor in five years. Taking the committee's recommendations and borrowing concepts from the massive U.S. effort to gear up for wartime production in the early 1940s, Snyder's plan provided 8,000 lower-level Saudi workers with the step-by-step training to qualify for the semiskilled job rankings. In addition, the program took 1,800 of the top-ranking semiskilled workers and provided them with advanced training to raise them to the skilled level.

The five-year plan introduced a new concept to the Aramco workforce: job skills training, more popularly known as one-eighth-time training. The plan mandated that one of every eight hours on the job, or one hour a day, be devoted to training Saudi workers. The responsibility for the content and execution of the training was placed squarely on the shoulders of the individual Saudi's immediate supervisor, who would draw on the expertise of the professional trainers in Dhahran as necessary. The plan called for a balance of on-the-job training and classroom instruction related to the job, setting the tone for Aramco training for years to come.

Snyder's approach was an early version of what was later called "Saudization," training Saudis to assume increasingly higher-ranking positions in the company. Although few Americans could imagine it at the time, Snyder's long-range goal was to train Saudis to be able to take



## Aramco Television

The first Arabic-language television station in Saudi Arabia, and only the second in the Middle East, was launched by Aramco on September 17, 1957. Channels 2 and 13 introduced a generation of Saudis and citizens of other nearby countries to the communications medium and used it for education as well as entertainment. A small English-language TV station with very limited transmission range had been operating out of the Dhahran air base since 1955, and an Arabic station had been introduced in Baghdad in early 1957. Within a few years, a TV station started broadcasting out of Kuwait City as well.

The new medium made a nationwide star out of its first programming host, Fahmi Basrawi, the former Jabal School teacher. The energetic instructor was a natural entertainer as well and hosted programs on Aramco TV for 17 years. A quiz show he developed, *Tri District Quiz*, made him a household name. Another popular television host was Jamil "Baba" Hattab, who hosted a children's program. Aramco TV also offered on-air classes in subjects such as mathematics, science and health education.

The station was an especially powerful educational medium in an era when public education in the Eastern Province was still being developed. It was particularly important for girls and women. Because there were no public schools for girls until 1961, women who were already past school age turned to the TV station in droves as a teaching tool. Basrawi recalled years later that "half of the [female] population in the Eastern Province learned how to read and write in Arabic from my lessons." Aramco's television station was so popular that in 1965 it had an estimated audience of 350,000 viewers.

Several years later, in 1969, a government TV station started broadcasting in Dammam. In response to this, Aramco changed the names of Channel 2 and 13 to Aramco TV and started broadcasting only in English, but held to its successful programming model. In 1981, the station changed names again and became Channel 3. As it had with many other businesses, Aramco eventually decided that, with the emergence of global TV networks in the 1990s, it made more sense for the oil company to get out of this non-oil business, and Channel 3 went off the air for good at the end of 1998.



Aramco television cameras roll as Jamil "Baba" Hattab takes the stage for a 1960 episode of his eponymous children's show.

over and run Aramco. He received his orders from Aramco Vice President and Director James Terry Duce, who had been president of a Texaco subsidiary in Colombia when the oil sector was nationalized in 1939 and spoke from personal experience.

From Duce's point of view, it was not a question of whether the Saudis were going to take over Aramco; it was a question of when. Snyder recalled an interview he had with Duce in the United States before heading for Dhahran:

I was told in substantially these words: "Your task at Dhahran is to train the Saudis as quickly and as soundly as possible to operate the Saudi oil industry. Inevitably, the Saudi government will eventually nationalize the industry. When that occurs, we want young Saudis to have attained the proficiency that will enable them to operate the oil industry efficiently and with goodwill toward Aramco. Thus, they will be serving their country's best interests and will be protecting the interests of our parent companies."

On my arrival in Dhahran and in all the years that followed I found that this enlightened business philosophy was the cornerstone of Aramco's relationship with the Saudi government. While our educational policy and procedures might be faulted for not making progress as dramatically as Saudi officials may have wished, my mandate from top management was to prepare Saudis as rapidly and as efficiently as possible to be able to eventually operate the Saudi oil industry in its entirety.

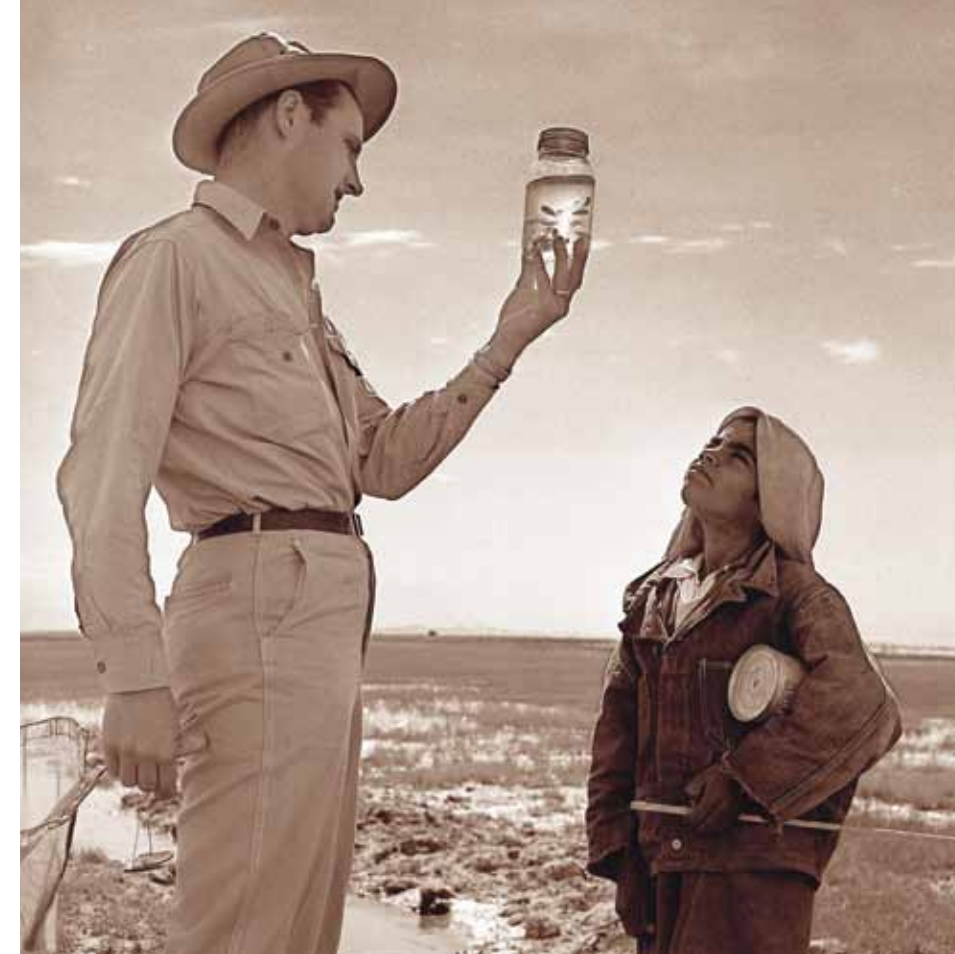
The results of the “50-in-5” (50 percent of the workforce qualifying as semiskilled in five years) plan were equivocal. Aramco exceeded its numerical targets in terms of the number of Saudis reaching specific skill levels and grade codes, but an outside reviewer considered the quality of training mediocre at best. Abdulaziz Al-Ajaji, who retired as vice president of Project Management in 2001, looked back on how different those training programs were from those of more recent years:

For a young man who joined the company at the time, the basic program available to selected people was to join Aramco schools to study English, math and science. Others could attend classes on their own time. It was a struggle. The process was lengthy and mostly vague. It took people several years to finish the required levels of study to qualify for any job, let alone the lack of specific development plans or guidance. You were mostly on your own, and you had to compete with everyone. Our training and development programs today are totally different. The company now has very structured individual development plans for almost every employee, with specific objectives and goals. There is a periodical review and follow-up where employees receive feedback and can participate in the discussion, and have the opportunity to attend selected courses and conferences.

In addition, relying on the immediate supervisor to do much of the training put the Saudi worker at the mercy of the American who was training him; not every foreman in the oil business was a natural-born teacher by any means. The plan itself may have been imperfect, but if nothing else it put the company on a course of training and education that was improved upon over the subsequent decades.

The company took a pragmatic and realistic stance when it came to educating boys in the 1950s: If an applicant had not completed a significant amount of formal education but appeared an eager learner, he was in. Ali Seflan, who retired from Saudi Aramco in November 2001 as senior vice president of Industrial Relations and Affairs, grew up in the town of Baljurashi in the al-Bahah Province of southwestern Saudi Arabia and heard about “the company” from a relative who had gone to work for Aramco. Seflan arrived at the Ras Tanura employment office in 1956 at age 13 with a fourth-grade education: “In those days they used to have the employment office fenced—too many people looking for jobs and there is only one employer. So we would just hang out on the fence and then the employment guy would come around and look. ... So first he starts, who has a sixth grade education? No answer. Then he goes, fifth grade? Nobody answers. Fourth

Long-serving employees, such as the 11 who gathered in Dhahran to celebrate their 10<sup>th</sup> anniversary of service with Aramco in 1948, served as role models for the rapidly expanding postwar Saudi workforce.



Donald Strait, assistant to Aramco entomologist Dr. Richard Daggy, and his young helper examine a jar of water collected from an irrigation canal near Dammam in 1949. Daggy drew upon his World War II experience with a DDT-spraying program in the South Pacific to conduct a similar program for Aramco in the Eastern Province, where malaria was endemic.



Mahdi ibn Ahmad presents a hospital report to Dr. T. C. Alexander, left, Aramco's medical director, and Dr. Robert C. Page for inspection in the company's Dhahran offices. Shown here in 1950, Alexander spent 20 years with the company building its medical program from a single first-aid station to a network of clinics, pharmacies and hospitals.

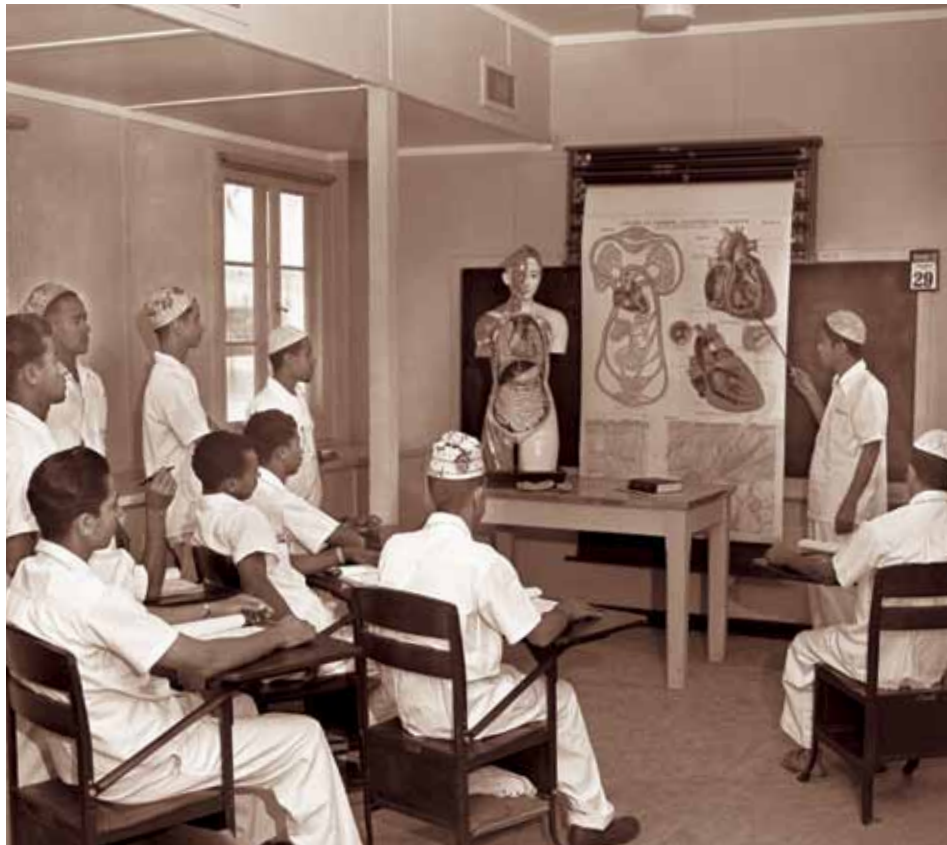
grade? And I jumped, so he said come in.” That was the opportunity Seflan needed, as the company eventually sent him to Rider University in New Jersey in the United States, where he earned a bachelor's degree in Finance, and to the University of Petroleum and Minerals, where he finished first in his class and earned an MBA in 1981.

A year later in October 1957, Mohammad Al-Mughamis, who retired from the company as executive director of Safety and Industrial Security in 1999, arrived at the Abqaiq employment office looking for a job. At the time, sand dunes came right up to the side of the building, which later became the main gate building. The 14-year-old was one of a dozen or so literate boys who were asked to form a separate group. The employment officer asked them their names, and then quizzed them on their multiplication tables—five times five, etc. Al-Mughamis's first question, 13 times 13, left him stumped; he had not advanced that far in school. “And he says, ‘OK, you go back, and next Monday maybe you'll have a chance,’” Al-Mughamis recalled. “I went back. Next Monday, he came and the first question was 13 times 13, and I said 169. I still remember today, 50 years later.”

The young Saudi men and boys who flocked by the thousands in the postwar years to work for Aramco were, for the most part, accustomed to hard work and relatively Spartan living conditions. Some came directly from their Bedouin family tents. Those who stayed with the company and made a career out of the oil business quickly learned that they had to work their way up, and that it was not always going to be easy. “We would run into what you call rednecks” among the lower-ranking American workers, recalled Hamad Juraifani, “but not among the engineers” or more senior staff.

**HEALTH CARE** The Saudi government promulgated its first significant labor relations laws in 1942, requiring employers to provide for the basic health care of employees, among other things. A year before the labor laws were on the books, Aramco's predecessor, Casoc, had initiated an aggressive campaign to fight malaria, which was endemic in most of its areas of operations. The campaign gained added urgency following a serious epidemic that plagued the towns of al-Khobar and Dammam in 1943. Under the direction of Dr. T. C. Alexander, one of the first doctors to join the company, Casoc launched a campaign of education and awareness at its own expense to combat malaria. This included door-to-door visits by Dr. Alexander and others to ensure that residents were draining standing water in flowerpots and elsewhere so that mosquito larvae would not

Nurse trainees study anatomy at the Dhahran Health Center in 1952. To earn a diploma in nursing, students had to complete three years of full-time training, half in the classroom and half hands-on in the clinics. Aided by Aramco scholarships, some nurses went on to pursue advanced studies at the American University of Beirut and other accredited institutions.



be able to develop and spread the disease. As another preventative measure, irrigation canals and oases in the Eastern Province were stocked with *Gambusia* fish, which prey upon mosquito larvae. In 1948, health-care workers added DDT to their mosquito-fighting arsenal.

The success of the program, which the government took over in 1956 and spread across much of the country, was captured in Aramco's medical records. Saudi employees in 1945 were being infected with malaria at the agonizingly high rate of nearly 200 cases per 1,000 persons. By 1949, the number of hospitalizations among employees for malaria had dropped to only a handful of cases, and by 1956, the problem was considered eradicated.

Another health issue plaguing Saudi Arabia and other developing countries during this period was trachoma, a bacterial infection of the eyes that can lead to impaired vision and blindness. In the early 1950s, the company found that 90 to 95 percent of Saudis treated at its health clinics showed signs of trachoma infection and that 80 to 85 percent of these patients had impaired vision. In 1954, the company began funding a research effort to find a vaccine for the prevention of trachoma, enlisting the Harvard School of Public Health to provide professional and technical staffing for the project. The initiative, for which Aramco donated more than \$2 million, significantly reduced the incidence of trachoma in the Saudi population.

Through the mid-1950s, Aramco weathered complaints from employees and the government about substandard health care. The existing government hospital in Dhahran was widely criticized by Saudis and others as being of poor quality at best and, at worst, a health hazard in its own right. Aramco responded by building a 263-bed hospital for Saudis in Dhahran in 1957 and 32-bed hospitals in Abqaiq and Ras Tanura in 1956 and 1957, respectively. The facilities provided Saudi employees and their dependents with free medical, surgical and hospital treatment. As local private hospitals were built (typically with loans from, or guaranteed by, Aramco), the company contracted with them to provide health-care services to employees and dependents.

Comprehensive health care did not come cheap. By 1955, Aramco was spending \$7 million a year to provide health care of all types to its employees. That figure rose to \$10 million by the end of the decade.

**INDUSTRIAL DEVELOPMENT** In what amounted to a “win-win” situation for both Aramco and Saudi society, the company created the Arab Industrial Development Department, a subsidiary of which was the Industrial Development Division (IDD) in 1946. Aramco's goal was to contribute to the growth of the local economy and to remove itself from non-oil concerns it had started to support its operations. These included everything from making ice cream and baking bread, to operating printing presses, large-scale poultry production facilities and heavy construction companies. Programs emanating from this new department encouraged local entrepreneurs to take over as contractors or suppliers to the company. Under the leadership of William Eltiste, the department formalized efforts that had already been under way at the company on an ad hoc basis.

Aramco offered technical, material and financial assistance to local entrepreneurs, many of whom had already been working for the company providing products or services. Examples of the financial assistance provided by Aramco included purchase orders and guarantees to obtain credit from local and foreign banks. At its peak in 1952, the portion of IDD exclusively concerned with technical assistance had 10 full-time employees plus clerical support. By 1956, Aramco was paying nearly \$12 million a year for products or services to local contractors who employed more than 3,000 Saudis. That amount fluctuated with Aramco's expansion plans, but it provided the lifeblood for modernizing the economy of the Eastern Province and fueling the growth of al-Khobar and Dammam in particular.

Aramco also bolstered the local business community by funding private investment in the service sector and infrastructure of the Eastern Province. From 1953 through 1956, the company made more than \$100,000 in guaranteed loans or refinancing of earlier loans to former Aramco employee 'Ali Al-Tamimi and his partners to build and expand their Dammam Laundry business. Al-Tamimi also received guaranteed loans of tens of thousands of dollars for foundry and construction partnerships in the mid-1950s. In 1956, the company guaranteed a loan of \$786,000 to Muhammad ibn Ahmad Al-Dossary for the construction of al-Sharq Hospital in al-Khobar. That year, the company also guaranteed loans of \$5,333 and \$13,333 to 'Abd al-'Aziz and Muhammad Almana to fund the construction of a dental and eye clinic, respectively. In 1957, Aramco guaranteed a loan of \$147,000 for the expansion of the Al-Khobar Electric Company.



Indefatigable entrepreneur 'Abd Allah Fouad, right, employed Bahrainis and Palestinians to translate correspondence and contracts for Aramco. Though that particular business venture lasted only from 1950–1951, Fouad's continued determination to pursue Aramco contracting opportunities led him to financial success.

**TAPLINE OPPORTUNITIES** Saudi contractors rapidly increased the amount of business they did with Aramco during the company's postwar building frenzy. For many local contractors, Tapline proved a tremendous opportunity. The scale of the \$230 million pipeline project overwhelmed the resources of Aramco and contractor Bechtel as well. Eltiste, head of the IDD effort, increasingly turned to promising local contractors and worked with them to hone their business and financial skills so they could perform the tasks required.

'Abd Allah Fouad, who as a young boy during World War II had been fired from Casoc for accidentally triggering an air-raid alarm, found work at Bapco in Bahrain and worked there for a few years before returning to Aramco. In 1947, he convinced a manager in Ras Tanura to give him another chance, even though his personnel file indicated he was not to be rehired. Granted a reprieve, he worked in an office, and after hours translated agreements between Aramco and local contractors. After having translated enough documents to learn that local contractors were making 8,000 to 10,000 riyals per contract, he convinced his manager he should be given a chance as a contractor. The manager agreed to let Fouad wash cars after hours. Fouad hired three workers from Bahrain, and arranged to pick up cars at the homes of American workers, wash and grease them, and then return the cars to the driveways before the Americans left for work the next morning. His second contract was to rebuild the wooden portion of the pier at Ras Tanura. By late 1948, Eltiste had signed up Fouad to provide manpower for the Tapline project.

Less than two years later, Fouad was responsible for supplying roughly 3,000 workers to Aramco for Tapline. At one point, he fell victim to internal malfeasance. Uncomfortable with conventional banking, many workers entrusted their earnings to one of Fouad's supervisors, who proceeded to abscond with much of the workers' savings. Fouad made good on the stolen savings out of his own funds, but almost went bankrupt in the process. He rebounded quickly by opening a translation business in Dammam and later by landing construction contracts with the U.S. military at the air base adjacent to the Dhahran community, and again with Aramco.

With the aid of an Aramco loan in 1956, 'Ali Al-Tamimi purchased a new Pantex dry-cleaning unit, which allowed him to increase the quality of services he offered to Aramco and other customers. Al-Tamimi's varied business interests grew into a multifaceted enterprise that included construction contracting, transportation and grocery stores.



Responding to the rapidly growing demand for construction materials in the Dammam area during the early 1950s, Yousuf Al-Zawawi opened a masonry plant that could churn out tens of thousands of masonry blocks for a single project.

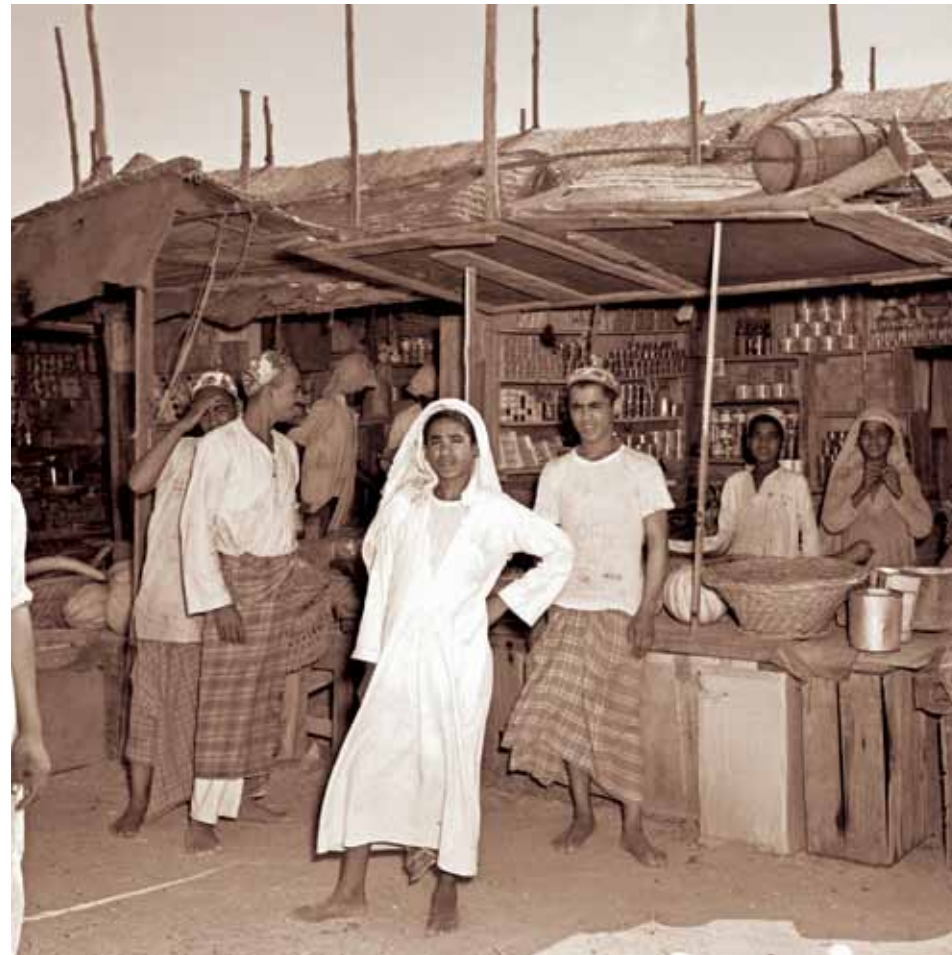
In 1962, Fouad formed a partnership with Al-Tamimi, which evolved to encompass several different businesses. They started as pipeline contractors, expanding over the years to own and operate numerous businesses, including wholesale warehouses. The partners even succeeded in bringing Safeway grocery stores into the Kingdom. In a clear demonstration of the "ripple effect" by which local entrepreneurship benefited Saudi society, Fouad and Al-Tamimi also helped fund and build hospitals and health clinics.

Another Saudi contractor receiving a major boost from Tapline was Suliman Olayan. He briefly worked for Bapco before joining Casoc in 1937, where he worked as a transportation dispatcher, a storehouse order man and a Government Relations translator before starting his own trucking company in 1947. His company boomed as a Bechtel contractor on Tapline and had more than 4,000 employees by the end of the pipeline's construction. He did not stop there, but rather expanded his holdings to more than 50 companies over a 55-year career as an independent businessman. His business interests were diverse, including transportation, industrial and consumer-product distribution, project management and construction, and banking and finance. Despite his reputation for avoiding the spotlight, he became one of the most widely known Saudi independent businessmen, serving on many charitable, business, advisory and educational boards, including Mobil Oil Company from 1980–1983. In March 2002, a few months before his death at age 83, *Forbes* magazine listed him as the 34<sup>TH</sup> richest man in the world.

'Abd Allah Al-Matrood worked for Aramco in the 1930s and '40s as a laundry man, collecting the clothes of mainly American workers and taking them to Bahrain, as there were no local laundries at the time. After the war, the company encouraged him to form his own business, National Laundry, and he later started his own dairy company, National Dairy and Ice Cream Plant.

The market Aramco provided was a powerful incentive for Saudi entrepreneurs who were willing to take risks. A few key businesses, such as a pipe-coating plant and an oxygen and acetylene plant, got started on the basis of purchase contracts from Aramco, which made it possible for entrepreneurs to obtain financing. In most cases, Aramco waited for a local businessman to establish a company and demonstrate its capabilities before winding down its equivalent operation and shifting the business to the local provider.

A *suq*, seen here in 1947, grew up around the Saudi residential camp in Dhahran. This market served the needs of unskilled and semiskilled workers, who were not allowed to use the Dhahran commissary and found it difficult to travel to al-Khobar.



Controversies arose when Aramco had to redo substandard work or when a contractor's workers complained that they should be paid wages equivalent to those paid to the oil company's employees. However, for the most part outsourcing was an efficient method to accomplish Aramco projects. It also spurred economic growth, provided jobs and helped develop Saudi Arabia's private sector. During its postwar expansion, the company increasingly relied on outsourcing work to contractors. These contractors employed 2,400 workers in January 1947, more than 9,700 in March 1949 and more than 11,000 by the spring of 1952. Over this same period, Aramco and Tapline paid more than \$46.8 million to contractors. By helping to jump-start local businesses, Aramco contributed enormously toward creating a thriving Saudi middle class, which remains a cornerstone of the country today.

**1953 STRIKE** Despite improvements in housing, training and health care in the early 1950s, Saudi employees and the Saudi government kept prodding Aramco to do more for its workers. Signs of worker discontent resurfaced in early 1953. The company did not recognize any particular group as speaking on behalf of the workers. Instead, company policy required that individual workers speak first with their immediate supervisors to resolve issues and then go up the chain of command if the issue was not resolved. Through this process, many Aramco officials learned of the problem, but recorded labor complaints reflected no great urgency.

On May 23, 1953, more than 150 intermediate-skilled Saudis and others sent a signed petition to Aramco management demanding cost-of-living increases and improved working conditions and privileges. The company refused to recognize the workers' legitimacy as a group, but said it would meet with a handful of them on June 30. Their primary complaints were that the company had failed to promote an adequate number of Saudis to senior positions and discriminated against Saudis in the camps.

Aramco rejected the workers' claims. In early September 1953, the regional government labor office supported the workers' position and directed the company to return to negotiations. The government formed an investigative commission comprising government representatives including *Shaykh* 'Abd Allah ibn 'Adwan, 'Ali Bay Jamil, Muhammad Husain 'Awny, Ibrahim Nur Al-Din, Wasib Al-Suba'y and 'Abd Al-Mun'im Al-Majdhub. The commission began taking worker testimony in Dhahran in early October. Despite a strike by some employees later that month, the commission continued its work. Many company officials categorized the petitioners as discontented dreamers and intellectuals who, after a taste of what the West had to offer, were now dissatisfied. Aramco leadership conceded that there were inequities in the treatment of Saudis in general, but they felt the company was moving as fast as it reasonably could to improve the workers' conditions.

Following the death of King 'Abd al-'Aziz on November 9, 1953, Saudis across the country quickly embraced the new ruler, King Sa'ud. The work of the commission hastened under the new King.

By the end of November 1953, the company had agreed to most of the workers' demands, including a 10 percent raise for general and intermediate staff. In addition, the government ordered the company to rehire any workers dismissed in the wake of the strike.

The final terms of the agreement were announced in January 1954. Among the highlights, Aramco announced that the lowest-paid Saudis, those being paid 10 riyals per day (equivalent to \$2.67) or less, received a 20 percent raise; those making between 10 and 20 riyals a day received a 15 percent raise; and all Saudis making more than 20 riyals a day received a 12 percent raise. The company also agreed to bear 20 percent of the cost of a house built or purchased under the Home Ownership Program; to make supervisory jobs available to Saudis to provide better opportunities for growth and advancement; and to give preference to Saudi employees when their skills equaled those of foreign employees and to pay Saudis the same wage in such cases.



Ali Al-Baluchi rose quickly from his initial position as an office boy and by 1956 was the secretary for Don E. Richards, superintendent of the Training Division. White-collar Saudi workers also suffered from disparities in pay and benefits.



The *suq* crowds up against the Saudi Camp mosque in this 1952 photo. A year later, widespread labor unrest, caused in part by the disparity in living conditions, led to gradual improvements in salaries, housing and other benefits.

Sa'd ibn 'Agil provides instruction to Ahmad ibn Sa'id, Muhammad ibn 'Abd Al-Aziz and Ya'qoub ibn Yousuf, left to right, in 1954. Operating a back pressure gas regulator was only one of many tasks that potential GOSP operators had to master.



By the end of 1954, Saudi workers relied more upon their peers in Personnel to periodically call for increased compensation and benefits. Muhammad A. Salamah rose through the Personnel ranks beginning in the late 1940s (he retired as a Personnel administrator in 1987) and witnessed many of the labor disputes, including the 1953 strike. Salamah said that over time he and his fellow Saudis emphasized negotiation over confrontation to improve their lot. They did not always get what they wanted, but they demonstrated good-faith actions. "Negotiation reaches someplace, you know, you compromise and you can reach an agreement, and that's what happened," he recalled. Others, including Frank Jungers, a superintendent in the Engineering and Mechanical Services Department during the latter 1950s and later company CEO, took it upon themselves to push for greater advancement of Saudis at all skill levels beginning in the mid- to late 1950s.

Many Saudis at the time, and in subsequent years, appreciated the support by the government to improve the lot of Saudi workers—not just in Aramco, but eventually across the country. As former Saudi Aramco president and CEO Abdallah Jum'ah remarked, "That government stance made it possible for someone like me to become president of the company."

In many ways, the 1950s illustrated the ever-increasing complexity of Aramco's role in the Kingdom. The growing pains of the postwar era demonstrated that Aramco still had much to learn about succeeding within the society in which it was now firmly ensconced. It had long ago proven its excellence in the extraordinary planning and execution required to find, produce and deliver oil from the desert. But the company discovered during this period that it still had much to understand about the "softer" aspects of the business: the listening and learning required to create a viable, stable and long-lasting relationship.

Further, given the growing prominence of Saudi Arabia as a dominant provider of oil and its well-established position among Arab and Muslim nations, it became obvious that the Kingdom and Aramco were becoming more open and exposed to the impact of world events. The jockeying for geopolitical power during the Cold War era weighed heavily on both in the years to come.



Though al-Khobar was still threaded with dirt roads in 1956, the colorful storefront signs, labeled in English and Arabic, offer a glimpse of the modern multicultural retail center it would become in later decades.

# Balancing Act

An exploration support caravan en route to the next drilling camp, 1952.







In the late 1950s, Aramco expanded its study-abroad program to include American institutions of higher education. This group, shown pausing in front of the White House in Washington, D.C.—Mustafa Al-Khan Abuahmad, ‘Abd Allah Busbayte, Ali Al-Naimi, Hamad A. Juraifani, Mahmoud Taibah, Rashid Al-Rashid and Najati Abu Khadrah—was the first to attend U.S. universities under the program.

William L. Owen was considered a tough negotiator even among the sharp-elbowed fraternity of oil industry lawyers. In the post–World War II years, Aramco relied on him to close major deals worth hundreds of millions of dollars, including the complex Tapline project.

Owen and William A. “Sandy” Campbell, vice president of Government Relations, had spent months getting assurances that Syria’s ratification of the Tapline Convention would pass muster with international legal experts. A lot was riding on their efforts; work was already well under way on both ends of the crude oil pipeline, from the Lebanese coast headed east and in Saudi Arabia headed northwest.

One evening in 1949, at a mountain resort in western Syria, Owen, Campbell and their wives arrived with high expectations at a reception. There, as guests of President Husni Al-Za’im, described by *Time* magazine as Syria’s “softhearted” dictator, they looked forward to an event signifying, at least unofficially, the successful culmination of the long negotiation process.

But something was not quite right. As they entered the reception hall, a large number of Syrian military personnel milled about distractedly, seemingly unsure of what to make of the newly arrived Americans. Shrugging it off, the foursome continued into the party, officially a fund-raiser for the Red Crescent, the Muslim equivalent of the Red Cross. They ended up bidding \$60,000 for the Parker pen that Al-Za’im had used to sign the Tapline Convention, an apt memento to be passed on to the Aramco board of directors.

They returned to their hotel that night satisfied that their work was over—but a 5 a.m. phone call aroused them from their slumbers. Al-Za’im had been assassinated late the night before by elements of the Syrian army. They were told later by a Syrian army officer that the assassination was to have occurred several hours earlier, but the presence of the Americans had thrown off the timing.

While shocked that their host had been murdered while they slept, Owen and Campbell were confronted with a new problem: Al-Za’im had been overthrown by Colonel Sami Hinnawi who, instead of taking command of the government himself, immediately passed the reins of power to Hashem Al-Atasi. Immediately thereafter, the new Syrian government went public with a radio broadcast outlining the positions of the new regime. While the government did not revoke all acts passed by Al-Za’im, it did not clarify the new regime’s stance toward Tapline.

Owen and Campbell caught a plane to Damascus the next day and demanded a meeting with Al-Atasi, Hinnawi and other Syrian leaders. Owen found himself dealing primarily with Hinnawi and emphasized to him that abrogating the Tapline agreement—which had been signed by the previous Syrian leadership—was against international law and would be a grave mistake.

Saudi employees board an airplane bound for Beirut and a 10-week training course at the American University of Beirut (AUB) in the early 1950s. The summer program began in 1949, and two years later, Aramco began offering 10 full scholarships each year to Saudi students to study at AUB, Aleppo College in Syria or other accredited Middle East institutions.



Saudi students in Dhahran experiment with electricity under the instruction of general science teachers G. C. Dunbar and L. P. Krueger. By educating Saudis in scientific principles rather than simply offering technical instruction, Aramco gave them the background necessary to rise through higher education.



Hinnawi told them to come back in a few hours. Around 4 p.m., the colonel assured Owen and Campbell that the Tapline agreement would be honored by his government. Emotionally spent, the Americans headed back to Dhahran.

While the Aramco negotiators' exploits were full of high drama, the incident was typical of the volatile geopolitical climate in which Aramco worked in the decade after World War II. Developments in other oil-producing countries had an increasing influence on relations between the oil company and the Saudi government. In addition, by the mid-1950s, the Cold War was in full force as the United States and the Soviet Union competed for global influence. The Middle East in particular was a flash point.

On the home front, one of the continued major internal efforts at Aramco during this period focused on developing Saudis to take on higher positions within the company. Aramco recognized that if Saudis were to continue to rise within the ranks, a greater number of them needed access to higher education. Some Saudi high school graduates were given the opportunity to attend university programs at Aramco's expense, first in the Middle East and later to colleges and universities in the United States. The company's scholarship program grew dramatically thereafter, giving hundreds of Saudis the education and experience required to become leaders.

**FOREIGN TRADE** The postwar rebuilding of Western Europe and Japan, led by the United States, was a balancing act. The countries needed U.S. financial support and investment. In July 1944, representatives of 44 nations met in the United States at Bretton Woods, New Hampshire, to create the financial foundation for the postwar world by liberalizing trade and stabilizing world currencies. As would soon become clear, currency stabilization proved harder than previously imagined.



The Aramco Overseas Company helped Aramco avoid difficult currency conversions by using payments received in non-U.S. currencies to contract services and purchase goods from suppliers in Western Europe, Egypt, Lebanon, India, Australia and New Zealand, among others. Its headquarters in The Hague, shown here in 1954, dominated an entire city block.

In the years immediately after the war, Aramco found itself selling crude oil for non-U.S. currencies in many parts of the world. Because of problems in converting the currencies of war-ravaged countries, this proved a cumbersome process. To recycle these currencies, the company set up purchasing offices, first in Rome and later in The Hague in Holland. Aramco personnel fanned out from these offices to purchase equipment and other goods manufactured in the countries whose currencies it was accumulating.

Wide-scale currency conversion was not effectively achieved until 1958, by which time the governments of Western Europe and Japan had expanded their trade capacity and doubled their dollar reserves. In the meantime, foreign countries tried to buy as little as possible in dollars.



**ABOVE** Prefabricated housing, bound for Dhahran, is hoisted aboard ship at an icy Scandinavian port in 1952. By accepting payment in kind from its debtor, Aramco was able to both settle the account and provide needed housing.

**RIGHT** Once in Dhahran, the portables were quickly occupied. Aramco met its urgent needs for permanent housing in the intermediate and general camps with a combination of prefabs and masonry dormitories, and also constructed barbershops, recreation centers, swimming pools, libraries and markets for retail goods.

**RIGHT** Though most Saudi oil was sold to customers outside the Kingdom, by the 1950s a healthy in-Kingdom market began to grow as well. Shown in January 1958, this station stood on the road between Dhahran and al-Khobar.

Bader Biltagi (a native Palestinian who had joined Aramco in 1950 and retired from the company in 1991) recalled how employees at the intermediate level and above benefited from the foreign exchange shortage. A Scandinavian country had purchased oil from Aramco in the early 1950s, but fell behind on its payments. Because Aramco needed housing, a barter deal was worked out. To pay for its oil, the country sent portable dwellings. Biltagi had to live in a tent for several weeks and then a non-air-conditioned double-occupancy room while the dormitories were being completed. He moved into one of the new portables by mid-1952. He recalled, “[Aramco] had lots of money ... they couldn’t collect. ... They took the portables in exchange and built us the intermediate camp. ... And it was something—air-conditioned rooms, a swimming pool, an open-air theater, a recreation center, a library and a decent cafeteria.”



## Currency Complications

The problems Casoc, and later Aramco, faced in paying employees’ wages and the Saudi government’s royalties stemmed from the particular form of currency each required.

Although King ‘Abd al-‘Aziz issued the first official coins in the 1920s, a number of types of currency, including the Indian rupee, remained in widespread circulation. Faced with a hodgepodge of money, Casoc chose to make its initial payroll payments in silver rupees, the currency most commonly used near its al-Hasa Province headquarters, when it began operations in 1933.

By 1938, the Saudi riyal, the country’s official currency, finally became widespread enough for Casoc to use it to pay its Saudi employees. Paying its rapidly expanding workforce payroll in silver coins caused logistical difficulties for Casoc, and later Aramco. Until the 1950s, the highest Saudi denomination was the single silver riyal, which meant that the average Saudi employee’s monthly wages filled a 4-kilogram sack. Assembling the combined monthly payroll, which at its peak equaled 60 metric tons of silver, was a complex operation that required its own dedicated trucks and warehouses.



Employees collect their wages, paid in silver riyals, from the cashier’s window in Ras Tanura in 1947. As the workforce grew—10,000 Saudis joined Aramco in that year alone—so, too, did wages, with the minimum pay reaching two riyals a day in 1946 and three riyals the following year. By October 1948, Aramco was paying nearly 5 million riyals a month to its non-American employees.

Aramco also had to contend with the terms of the concession agreement, which required that the Saudi government be paid its royalty on oil revenues in gold. The fact that the United States had abandoned the gold standard in 1933 created a challenge from the initial concession payment onward. Over the years, solutions ranged from flying British sovereigns in from Commonwealth countries to paying by weight with gold bars. Regardless of the complicated arrangements involved, Aramco was able to keep its employees and the Saudi government paid in full.

## Palestine Crisis



For about 1,000 Palestinians, the offer of new jobs with Aramco allowed them to leave crowded conditions within refugee camps and earn a decent income for their skills.

When King ‘Abd al-‘Aziz met with U.S. President Roosevelt in the Suez Canal Zone in early 1945, the looming conflict in Palestine ranked high on the King’s agenda. It continued to be a sensitive point between the two countries, leaving Aramco uncomfortably caught in the middle. Company officials attempted, in most cases successfully, to remaining neutral on the issue and went about their business, but again—like most geopolitical issues during this period—it was a delicate balancing act.

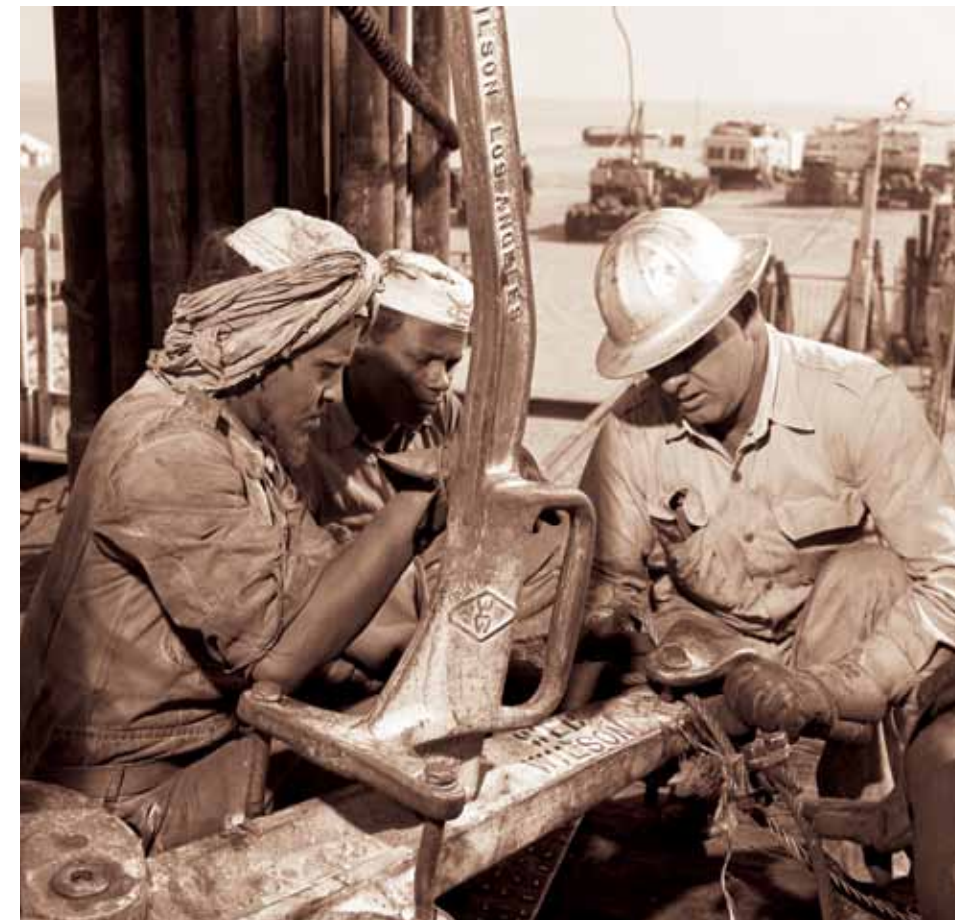
Despite mounting regional passions, which he fully understood and largely shared, King ‘Abd al-‘Aziz remained focused on the best interests of his country in the postwar years. J. Rives Childs, American minister to Saudi Arabia, met with the King in Riyadh on December 1, 1947, just after the U.N. vote to divide Palestine—which was then under British mandate—between the Arabs and the Jews. The action was supported in Washington, and Childs felt the Saudis became more embittered toward the United States than they had ever been. But King ‘Abd al-‘Aziz was looking beyond the fervor of the moment. Childs noted later that the King was keen on maintaining the relations between his country and the United States—in which he saw a lot of benefits for his nation—despite the differences of political opinions between them regarding the Palestinian issue.

Over the next two weeks, rumors swirled that Aramco’s Saudi employees might be conscripted to fight on the side of the Palestinians if and when war broke out and that Aramco’s trucks might be commandeered to drive them across the northern desert close to the battle lines. The Saudi workers themselves did not express any hostility toward Americans working alongside them, or against Aramco itself. The King had sent word that Americans in Saudi Arabia were there to help the country develop and, as guests and extenders of assistance, they should not be harassed or entangled in any political differences.

A Saudi delegate delivered essentially the same message to a meeting of the Arab League in Cairo. The Foreign Ministers of Jordan and Iraq lobbied for Saudi Arabia to sever relations with the United States over the Palestine issue and cancel the oil concession. According to a December 15 telegram from U.S. officials in Jiddah to Washington, the Saudi delegate responded: “Saudi Arabia was at one with the other Arab states in opposition to the establishment of a Jewish state but saw no reason to run counter to Saudi Arabia’s own interests by severing relations with U.S.”

Worried that the inevitable conflict following the creation of Israel in May 1948 might endanger workers in the immediate region, Aramco temporarily suspended work on Tapline. This suspension remained until early 1949. Meanwhile, as a sign of solidarity with displaced Palestinians, King ‘Abd al-‘Aziz encouraged the company to hire them whenever there was an employment opportunity. Many Palestinians, who were among the best-educated Arab populations in the Middle East at the time, were subsequently hired as teachers and for other government positions in Saudi Arabia as well.

Bader Biltagi was one of about 1,000 Palestinians who found work with Aramco. Many, he recalled, returned to the more amenable climate of Jordan, Lebanon and Syria in a matter of months. A few dozen others were deported in the mid-1950s for allegedly affiliating with radical political factions in the Middle East. Biltagi learned Urdu to communicate more effectively with coworkers from the Indian subcontinent and taught Arabic and English part-time to Saudi employees as part of the nationwide and company-wide campaign against illiteracy that began in 1953. He retired from the company in 1991 after 41 years, in which he worked mostly in Finance.



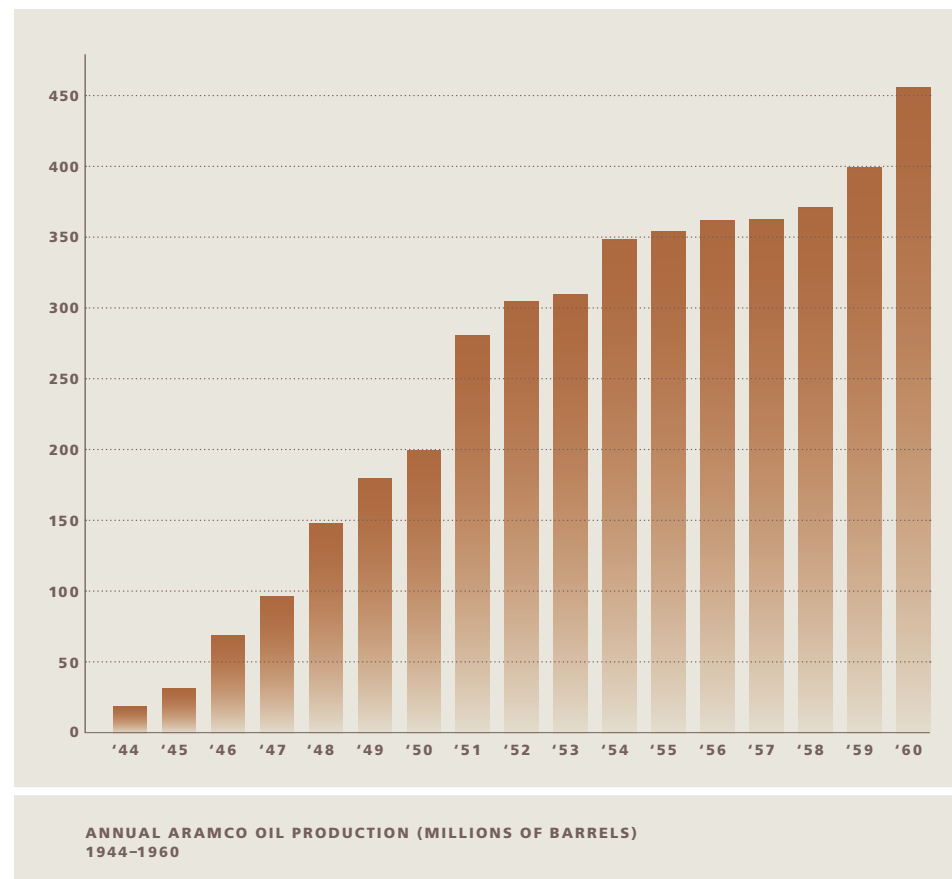
A drilling team works in the Rub’ al-Khali in 1959, part of the first wave of exploratory drilling in the region. In the late 1950s, Aramco was still trying to convince Saudi industrial workers to replace their traditional *ghutra* with a hard hat and their sandals with work shoes. Nevertheless, in 1958 Aramco’s disabling injury rate of 3.1 per million work hours compared favorably with the U.S. oil industry average of 7.0.

**CHANGING THE FORMULA: PROFIT SHARING** While the extraordinary and unexpected postwar surge in demand for petroleum boosted the economies of every oil-producing country in the world, there was one problem. The oil companies that were extracting and marketing that oil were getting richer faster than the host governments. Resentment was building among the oil states with developing economies. Something had to change.

Saudi government ministers were particularly unhappy when they looked at Aramco’s financial results for 1949. The company had paid the U.S. government roughly \$43 million in taxes, nearly \$6 million more than it paid the Saudi government in oil royalties. However, this \$37 million in royalties was more than three times that of the Kuwait Oil Company, more than double the Iraq Petroleum Company and comparable to Anglo-Iranian Oil’s payments to their respective governments. Nonetheless, Saudi officials could not ignore the simple facts: As annual oil production hit 174 million barrels in 1949, Aramco’s profits were an astounding \$105 million.

Looking back on the era, in 1957 then-chairman Fred Davies testified before a U.S. Senate subcommittee:

They [Saudi government officials] weren’t a darn bit happy about that.” He put their response in the context of events that were driving the thinking of oil-country leaders in the late 1940s: “The Saudi Arabian Government had just entered into the contract with the [Getty Oil Company] on Saudi Arabia’s half of the [Saudi-Kuwait] Neutral Zone ... and the terms they obtained were much more than ours. Venezuela had gone to its tax arrangement. The Saudi Arabian Government knew of all those things. Our concession had greatly increased in value. We had developed a big reserve out there. They wanted more. They asked as early as 1948, ‘Isn’t there some way in which we can get a greater take?’ and a little later than that they said, ‘Isn’t there some way in which the income tax you pay to the United States can be diverted to us in whole or in part?’



In 1948, Venezuela's government levied a tax of 50 percent on the profits of oil companies' production from Venezuelan fields. The result was an immediate and dramatic increase in Venezuela's oil-related revenues. The oil companies there grumbled but stayed. Venezuelan government officials spread the word to their peers in the Middle East, even translating a version of their agreement into Arabic. It was not an altruistic gesture. Venezuela wanted the Middle Eastern countries to adopt similar tax structures so Venezuelan oil would not be priced out of much of the world's markets.

Aramco and the U.S. government were aware that Saudi opinion favored a revised concession agreement as well. On August 19, 1949, the U.S. Embassy in Jiddah forwarded to the State Department a copy of an editorial that had appeared in the Saudi newspaper *Al-Bilad al-Sa'udiyah* the previous month. The editorial, translated below, called for renegotiating the concession agreement to give Saudis a greater share of their oil wealth in light of the deal struck by Getty's oil company earlier in the year:

In bringing to the attention of the Government the necessity for such revision, I merely express the unanimous desire expressed by the people in both their private and public meetings inspired by their concern that the Government should meet the demands of its vast developmental projects which currently deplete all its resources in order to realize the royal will that prosperity and improved conditions obtain for the entire nation. Money is the keystone to all development. It is quite within our reach and we can obtain by negotiations our just due in order to meet the demands of development.

Saudi Arabia began negotiations with Aramco on the issue early in 1949 and reached agreement on what effectively was a 50/50 profit-sharing arrangement in December 1950. The parent companies needed some convincing. A U.S. State Department policy paper on the Middle Eastern oil industry argued that "since company retreat is inevitable it would seem useful to make the retreat as beneficial and orderly as possible to all concerned." The State Department



'Id ibn Ahmad opens a gasoline-blending discharge valve at the Ras Tanura blending and transfer pump house in 1956, a year in which the refinery processed more than 70 million barrels of oil, nearly double the amount of 1950.

also favored the deal on the grounds that the outbreak of the Korean War in June 1950 might spark Communist incursions in the Middle East and limit U.S. access to oil in a crisis. Despite these factors, some representatives of Aramco's parent companies steadfastly argued that they should stick with a literal reading of their concession agreement, which prohibited the imposition of income taxes by the Saudi government. George McGhee, U.S. Assistant Secretary for Near Eastern Affairs, firmly countered this position, telling Aramco that it needed to face up to "the practical necessity of horsetrading."

## The Open Door

The Arab-Israeli War of 1948 left hundreds of thousands of Palestinians homeless and without work. Aware of their plight, King 'Abd al-'Aziz asked Aramco, which already employed some Palestinians, to make a concerted effort to find jobs for the displaced Palestinians. Impressed by the number of educated professionals and skilled craftsmen among them, Aramco opened recruiting offices in Lebanon, Jordan and Gaza.

The offices themselves provided the first opportunities for Palestinian refugee employment. Shafiq W. Kombargi, a refugee then living in Beirut who went on to a 50-year career at Aramco, recalled being hired as a recruiting clerk in 1949: "In response to ads in the local press, we had a flood of refugees, many of whom enjoyed the qualifications that were badly needed, like doctors and nurses and teachers and accountants and machinists and engineers and so on."

Palestinians played a key role in the company's training programs. The majority of those hired spoke English and Arabic, and many became instructors for Aramco's language and technical classes. Others took jobs as translators or interpreters. Even those who worked in the refineries or oil fields were called upon for on-the-job translations when Americans and Saudis struggled to communicate. In opening its doors to the Palestinians, Aramco not only increased the number of Arabs on its payroll but also improved its ability to train Saudi employees.



Shafiq Kombargi, lower right, once a Palestinian refugee himself, examines the carpentry of other Palestinian refugees in his role as an Aramco recruiter in 1951. Aramco hired hundreds of Palestinians at a time when the company needed skilled workers.

Echoing this viewpoint, Aramco shareholder Jersey generated a position paper on the 50/50 subject, reviewing oil company–host country issues going back to the Mexican nationalization of its oil industry in 1938. “We now know that the safety of our position in any country depends not alone on compliance with laws and contracts, or on the rate or amount of our payments to the government, but on whether our whole relationship is accepted at any given moment by the government and public opinion of the country and by our own government and public opinion—as ‘fair.’ If it is not so accepted, it will be changed. ... Experience already shows that there is something inherently satisfying in the 50/50 concept.”

‘Abd Allah ibn Hasan, standing second from left with his day crew, supervised operations at the newly opened ‘Ain Dar GOSP No. 4 in November 1952. He was one of several Saudis to be given control of the complex operations at a GOSP.



The State Department favored the arrangement, but whether the U.S. Treasury Department would agree remained to be seen. The impact on taxes collected by the United States on Aramco’s operations was dramatic. The \$43 million in U.S. taxes paid by Aramco on its Saudi oil profits in 1949 had skidded to less than \$300,000 two years later. Saudi Arabia, on the other hand, saw its tax and royalty income from Aramco jump to \$103 million by 1951 compared with royalty payments of \$37 million only two years earlier. The U.S. Internal Revenue Service did not formally approve the 50/50 deal until 1955, when it audited Aramco’s 1950 tax filing. In 1957, the Joint Congressional Committee on Internal Revenue Taxation also signed off on the tax treatment.

**ONASSIS ARBITRATION** The 50/50 profit-sharing deal demonstrated that Aramco and the Saudi government could amend their working arrangements to adjust to shifting international circumstances. Another serious challenge to the relationship between the two parties arose in 1954 during the first year of King Sa’ud’s reign. The Saudi government surprised Aramco by granting Greek shipping magnate Aristotle Onassis the exclusive right to ship Saudi oil and to form a company in Jiddah called the Saudi Arabian Tankers Company, Ltd., or Satco. In return, Onassis offered to “maintain a minimum of 500,000 tons of tankers under the Saudi Arabian flag and to register this tonnage in Saudi Arabia.” Onassis also promised to provide the government with educational and job-creating projects.

Aramco CEO Fred Davies notified the government that Aramco would “continue to operate as we had in the past,” citing the following specific points with which it took issue regarding the Onassis deal:

Such implementation would (1) be contrary to and violate both the letter and spirit of the existing agreements between Saudi Arabian Government and the Company; (2) be contrary to long-established business and arrangements and procedures developed in reliance on these agreements; (3) be contrary to established world-wide custom and practice in the international oil business; (4) have a disastrous effect upon the presently established sales outlets for Saudi oil and the possible future development thereof; and (5) be wholly impracticable.

The stage was set for a confrontation. Aramco officials worked the phones to set up a legal team to take the government to arbitration, as provided for in the concession agreement. Aramco would not recognize the validity of the Onassis contract until discussions with the government were completed. The company’s position, which was made clear to the government and to Onassis, was that if any of Onassis’s tankers pulled up at Ras Tanura Terminal, they would be turned away.

Most industrialized nations and companies involved in international shipping threatened to boycott Onassis’s tankers. Even Karl Twitchell was brought out of retirement to lobby the Saudi government on Aramco’s behalf. The U.S. National Security Council decided to take “all appropriate measures to bring about the cancellation of the agreement between the Saudi Arabian Government and Onassis.”

Aramco’s legal team concluded that not only was the company’s position correct due to the terms specified in the agreement, but it was also correct within the constraints of Saudi and Muslim laws. After weighing the issue, the government agreed to international arbitration in Geneva. In fact,

## Getty Raises the Stakes

In February 1949, the Getty-controlled Pacific Western Oil Corporation (the precursor to Getty Oil Company) decided it was willing to pay for an opportunity to explore for oil in what already was proving to be one of the most oil-rich regions on Earth. The company paid a cash bonus of \$9.5 million to the Saudi government for a concession in the Neutral Zone lying between Saudi Arabia and Kuwait, in which the two countries had joint interests. Kuwait had already granted a corresponding concession in the Neutral Zone to Aminoil (whose second-in-command was former Aramco man James MacPherson) for \$7.5 million.

Getty also agreed to pay an annual rent of \$1 million until oil was discovered. Once oil production was under way, Pacific Western agreed that it would pay 55 cents on each barrel of oil produced thereafter. That far exceeded the 35-cent and 33-cent payments that Aminoil and Aramco, respectively, had agreed to, and was a multiple of the meager 16.5 cents that the Anglo-Iranian Oil Company and Iraq Petroleum Company were paying, not to mention the mere 15-cent royalty paid to Kuwait by the Kuwait Oil Company.

Getty also agreed to fund a training program and schools, as well as build housing and a mosque. The companies did not discover oil in the Neutral Zone until 1953, but the find ended up making J. Paul Getty a billionaire and America’s richest man by 1957.



J. Paul Getty discusses oil operations near al-Wafrah with King Sa’ud in 1954, a year after Getty’s Pacific Western Oil Corporation first struck oil in its Neutral Zone concession.

## Moving to Dhahran

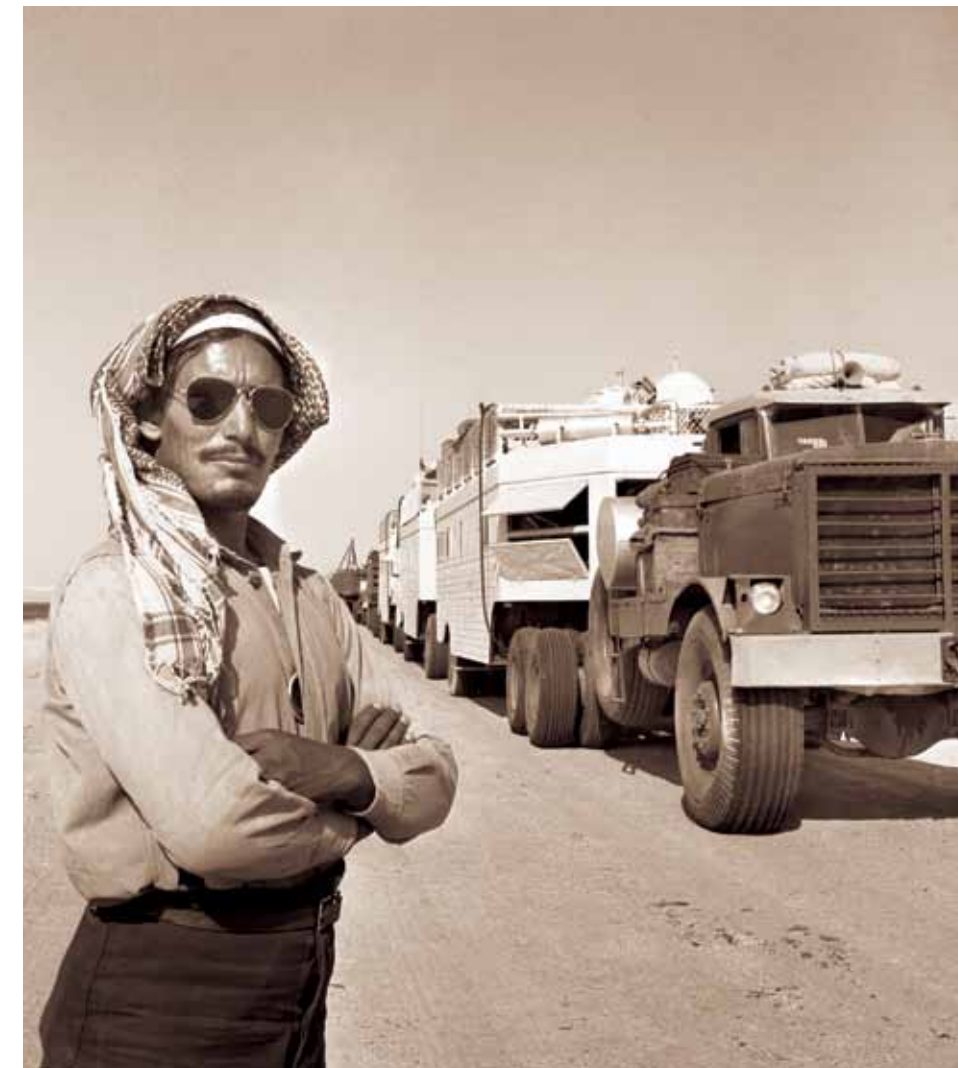
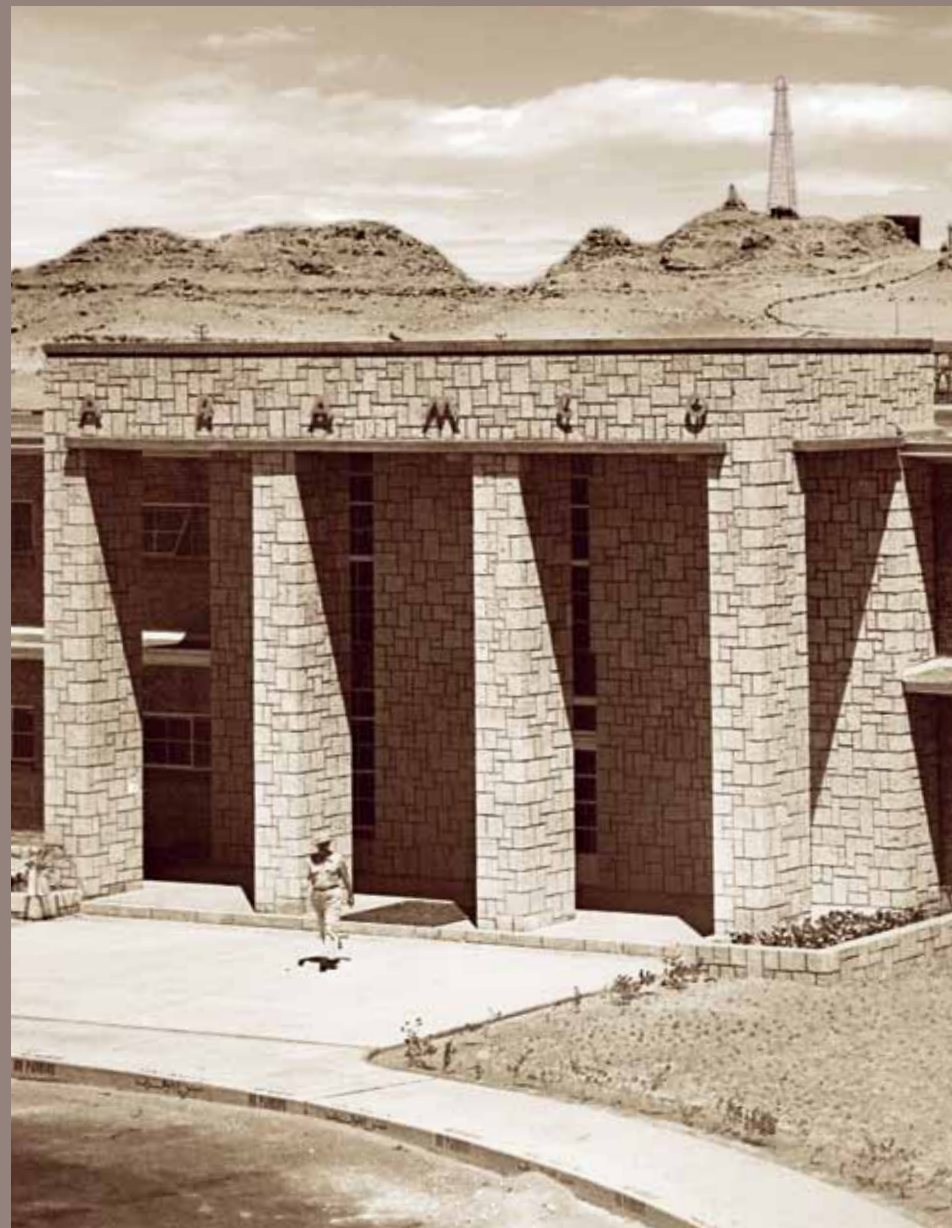
For several years following the end of World War II, the Saudi government had been complaining about how hard it was to get a direct answer out of Aramco officials located in the Kingdom. The more important the issue, the greater the delay, as local Aramco leadership had to confer with higher-ups in San Francisco, or in New York after the company relocated its headquarters there in January 1949. The Saudis also left the impression with many Aramco executives that they did not think the Aramco shareholders were showing them proper respect by treating the company officials in the Kingdom as underlings. The Aramco board finally agreed to move the company's top officers from New York to Dhahran in 1952.

William Mulligan reflected years later that the move benefited Aramco as well as the Saudi government: It was "one of the greatest things that ever happened to us. It meant that instead of waiting for New York or London to make a decision they were being made where it was important. ... Having our headquarters there made it a lot easier to respond rapidly to situations; and at all times at our headquarters the management ... were fairly close to the people and the employees, the public and the Government with which we were much involved. We were there while Anglo-Iranian was in London and Amsterdam waiting for instructions."

BELOW In 1949, Aramco headquarters moved from San Francisco to this building at 505 Park Avenue, New York City.



RIGHT Aramco headquarters and the company's top executives moved to this building in Dhahran in 1952.



Lead driver Khalifah ibn Nahir stands in front of the caravan of trucks that ferried structural drilling party No. 1 from Dhahran to its next well site in September 1953.

Aramco officials also sensed that the government had begun to sour on Onassis. This disenchantment might have first been prompted by the international condemnation of the tanker deal within a few months of signing the contract. The government appeared to distance itself further as negative reports about the deal started appearing in the European press.

By the time the arbitration panel ruled in Aramco's favor in 1958, it was a relief to both the company and the government. Aramco was heartened by the government's willingness to accept the arbitration process. As Mulligan noted, "We obviously believed that the Saudi Government would abide by the winning verdict, as it did. ... [W]e had had a lot of negotiations, we had had a lot of fights but we thought that we would get a fair shake from the Government, as we did."

**SUEZ CRISIS** The Suez Canal was completed in 1869 as a crucial shipping route linking European markets with India and Asia. The canal's economic importance shifted in the post-World War II years to become a key artery for an important commodity: crude oil. In addition to Tapline and a smaller artery tracing a similar route from Iraq, the Suez Canal was a principal means of getting Middle Eastern oil to Europe.

Colonel Gamal Abdel Nasser, who was the sole Egyptian ruler by 1954, viewed the Suez Canal Zone as a colonial-era line in the sand, both literally and figuratively. He preached pan-Arabism, calling for the unity of the Arab world with himself leading the assembled masses. In 1956, Nasser felt betrayed by Western powers and the World Bank when they dropped earlier plans to lend Egypt the funds to build a giant dam on the Nile River at Aswan. He determined that Suez Canal usage fees could finance the dam and that the funding would rise dramatically



Aristotle Onassis, right, consults with Ahmad Radhi, a Saudi businessman, at the port of Jiddah in July 1955. The previous year, Onassis was granted an exclusive shipping contract for Saudi oil, an arrangement that contradicted Aramco's agreement with the government. Three years later, an international arbitration panel ruled the contract illegitimate.

The *Eli Knudsen*, a Norwegian oil tanker, sails out of the Suez Canal in January 1957. This ship and 12 others were transiting the canal at the time of the 1956 crisis and remained stranded for two months.



if he controlled the canal. On July 26, the Egyptian army took over control of the Canal Zone from British and French interests. Western powers refused to recognize Nasser's *fait accompli*. Tensions mounted throughout the summer.

As the crisis carried into the fall, U.S. President Dwight D. Eisenhower's administration cautioned the British and French against overreacting. The Americans were convinced that any attempt to rout the Egyptians and replace Nasser's government by force would backfire and provide the Soviet Union with an excuse to step into the conflict. The Soviets would claim that they were the true allies of the developing world and that the West could not be trusted to act beyond its imperialist interests. With Eisenhower seeking reelection in November 1956 and the Korean conflict behind him, the last thing the U.S. President needed was another war on his hands.

Despite Eisenhower's concerns, the British, French and Israeli forces planned a coordinated attack on the canal, which began on October 29, 1956, as Israeli troops crossed into the Sinai Desert. As soon as news of the invasion became known, Saudi Arabia and virtually all Arab states sided strongly with Egypt. King Sa'ud halted oil shipments to Britain and France and agreed that Egyptian military aircraft could land in Saudi Arabia to avoid destruction at the hands of the British and French. Egypt's Syrian allies sabotaged IPC's pipeline, cutting off another means of transporting Middle Eastern oil.

The British, French and Israelis were forced to withdraw quickly when a furious President Eisenhower denounced the invasion and threatened to cut off aid to all involved. By the spring of 1957, Egypt was operating as the sole owner of the canal.

The regional standing of both Saudi Arabia and America was enhanced by the crisis. Eisenhower's public split with his wartime allies and Israel combined with Saudi Arabia's clear support for Egypt left American-owned Aramco free of the sabotage and rioting that plagued many oil facilities within the British sphere of influence in the Middle East. In fact, the company aided a Red Crescent drive among its employees for the victims of the conflict, with Aramco matching the money raised by its employees for aid to Egypt.

## The Rise of the Supertanker

Since Saudi oil began flowing in the 1930s, tankers bearing it westward favored the relatively short, nine-day trip through the Suez Canal over the much longer journey around the southern tip of Africa. Despite the heavy tolls levied by the British operating the canal, the industry sent the majority of its oil up the Red Sea in tankers small enough to maneuver through the canal's shallow waters. The opening of Tapline in 1950 provided an alternative for some Aramco oil, but most of the company's exports still followed the old route. The closure of the canal during the Suez Crisis called into question its reliability and forced oil producers in the region to reconsider their transportation choices.

Although pipelines were already a widely used alternative, the sabotage of the Iraq Petroleum Company's pipeline during the Suez Crisis left industry executives with misgivings about their dependability. Instead of relying heavily on that potentially vulnerable network, the oil industry turned its attention back to the ocean route around Africa's Cape of Good Hope. The length of the journey had once made it too expensive, but advances in technology now allowed shipbuilders to construct supertankers capable of carrying hundreds of thousands of tons of oil—more than offsetting the extra travel time and fuel expense.

After the Suez Canal reopened in 1957, oil companies remained wary. Their caution proved justified when the canal closed again in the aftermath of the 1967 Arab-Israeli War, this time for eight years. Massive supertankers, some as large as 500,000 tons, again emerged as the most viable shipping method, and they rule the oil transportation industry to this day.



The Saudi Arabian tanker *Al-Malik Saud Al-Awal* was considered a giant when it first began to transport oil in 1954. Its 47,000-ton tanks were soon dwarfed by the supertankers that were built in the wake of the 1956 Suez Crisis.



## The Buraimi Dispute

The fact that Aramco's concession boundaries coincided in many areas with international borders involved the company in disputes in the Kingdom's far southeast. The precise southern border of Saudi Arabia, located almost exclusively in expanses of desert and crossed, albeit rarely, by largely nomadic tribes, was not determined for decades. In the immediate postwar years, the area along the Gulf and near the base of the Qatar peninsula became of interest to Saudi Arabia, Oman and Great Britain and its crucial protectorates, which included much of the present-day United Arab Emirates (UAE). The unmarked borders in this area had been uncertain for decades, but were of new importance because of the prospects for oil in the vicinity.

All sides produced maps, historical documents and Bedouin testimony lending weight to their respective arguments for control of the area. In 1949, King 'Abd al-'Aziz declared dominion over the area, named after the prominent Buraimi oasis, on the grounds that his ancestors had controlled the region for most of the 19<sup>th</sup> century. To reinforce the King's point, three years later a Saudi official, 'Abd Allah Al-'Utayshan, led a force of 40 armed men to claim the oasis for Saudi Arabia.

The British loudly protested but the Saudi troops refused to budge, and both sides agreed to refer the dispute to international arbitration. Matters only intensified when Aramco provided a number of maps and other documents supporting the Saudi position. Infighting among the arbitration panel members resulted in an impasse. On October 26, 1955, Britain sent in soldiers and recaptured the contested oasis and surrounding area from the Saudi troops. Saudi Arabia protested Britain's actions to the United Nations two days later but received no diplomatic remedy.

'Ali Hafiz, a prominent Saudi journalist, interviews the recently released *Shaykh* Rashid ibn Hamaid and *Shaykh* Sultan ibn Saqr on their experience as British prisoners. The men were captured as a part of British military action at Buraimi oasis during the mid-1950s.



The territorial dispute went unresolved for several years. Ongoing discussions during the early 1970s between King Faysal and *Shaykh* Zayed bin Sultan Al Nahyan, governor of the Emirate of Abu Dhabi and President of the UAE, eventually lead to a resolution. On July 29, 1974, Saudi Arabia and Abu Dhabi reached an accord. The agreement clearly defined the borders between the two countries, established the rights to explore for and develop the hydrocarbon resources in the border area, and gave Saudi Arabia a corridor of land to the Gulf between the United Arab Emirates and Qatar, sovereignty over some Gulf islands and unimpeded access to others in the area.

**MODERNIZING GOVERNMENT** The Saudi government underwent a significant period of growth and centralization during the 1950s under King Sa'ud. Government business that had regularly occurred in Jiddah and Makkah was consolidated in Riyadh. New ministries were established and located in the capital city, and numerous public works projects were carried out in Riyadh and around the country.

In addition, a new generation of university-trained Saudis and other Arab technocrats were helping manage the country's affairs. One of the most prominent Saudi officials to have a direct impact on Aramco during this period was Abdullah H. Tariki.

Tariki received a bachelor's degree from the University of Cairo in 1944 and left for America a year later to study at the University of Texas, where he received a master's degree in petroleum geology. In 1948, he returned to Saudi Arabia. Widely considered one of the sharpest intellects of his generation and known for his dedication to public service, he quickly rose through the government bureaucracy, moving from the Ministry of Finance to oversight of the rapidly expanding oil industry. Tariki's experience and intellect made him naturally sensitive to any indication of second-class citizenship. In 1954, while stationed in the Eastern Province, he insisted on living in Aramco's senior staff community in Dhahran, citing a clause in the 50/50 agreement that allowed \$700,000 annually "towards expenses of government officials" to bolster his case for housing in that area. By all accounts, Tariki felt discriminated against by the Americans running Dhahran in 1954.

Peter Speers, who worked in Government Affairs at Aramco at the time, recalled,

The mentality [of] some Aramco management at that time was pretty much, 'We're in charge here, this is our company,' and Tariki came, ready to move in, and instead of anyone helping him, taking him over to where the housing was controlled, introducing him and so on, they turned him loose and said, 'Go get yourself a house.' Anyway, I think he may have had a bit of a chip on his shoulder when he arrived, but that certainly added to it and caused some of the troubles that came later.

Shortly after inheriting the throne, King Sa'ud visits Aramco's Dhahran operations in January 1954. Like his father seven years earlier, he hosted a reception for Aramcons and their families near the recreation center's tennis courts.





King Sa'ud's initiative to centralize Saudi government functions in Riyadh led to a construction boom. Designed by an Egyptian architect, the new Ministry buildings line the road to the airport—another 1950s addition to the rapidly urbanizing city—in this 1959 photo.

Tariki was appointed Director General of Petroleum and Mineral Resources in 1954 and became the Kingdom's first Minister of Petroleum and Mineral Resources upon the creation of the Ministry in 1960. He continued to push for greater sharing of information between Aramco and the government as well as more equitable financial arrangements between the two entities. By 1960, his coordination with like-minded leaders among oil-producing nations led to the creation of the Organization of Petroleum Exporting Countries, or OPEC.

Since the time of the 50/50 profit-sharing negotiations in 1950, the government had prodded Aramco to promote more Saudis to senior positions. The same discussions that led Aramco to relocate its CEO and president from New York to Dhahran in 1952 also addressed Saudi demands for representation on Aramco's board of directors. Discussions about Saudi board representation waxed and waned for years. In 1959, Tariki and Hafiz Wahbah—a former Saudi ambassador to the United Kingdom—were the first two Saudis named to the Aramco board of directors.

Money, as always, remained a critical factor in the company's relationship with the government. The rapid growth in the size of the government, as well as mounting expenditures, had drained the country's coffers. Furthermore, the disruption of oil traffic through the Suez Canal in 1956–1957 resulted in a 40 percent plunge in oil revenues. The government needed more money to fund its expansion projects and sweeping improvements to pilgrimage sites.

Abdullah H. Tariki, Director General of Petroleum and Mineral Resources, joins Aramco Vice President Tom Barger at the February 1959 grand opening of the 'Ain Dar Gas Injection Plant. During his tenure, Tariki helped engineer significant changes in the relationship between the government and Aramco.



The government was in a perilous financial condition by the late 1950s. Annual oil revenues increased from \$169.8 million in 1953 to \$269.3 million in 1959, yet the government by that point was on the verge of bankruptcy. It owed nearly 1.25 billion riyals in foreign debt and 600 million riyals to domestic creditors. The riyal had plunged in value from the official fixed rate of 3.75 to the dollar to 6.25 to the dollar. Dramatic changes were called for.

Faced with a fiscal crisis, King Sa'ud in 1958 granted Crown Prince Faysal full executive powers in financial, internal and foreign affairs. The Crown Prince soon introduced sweeping economic and political reforms. Acting as his own finance minister, he negotiated with Aramco to guarantee and renew \$92 million in loans the government had arranged with American banks to keep the Kingdom afloat. Faysal revamped the government structure and insisted on strict financial austerity, cutting government and royal family spending and publishing a state budget.



**BUILDING SAUDI LEADERS** Aramco's top-performing Saudi workers had an opportunity to dramatically broaden their experience when the company began a college scholarship program in the early 1950s. The company each year awarded 10 Saudi employees full college scholarships and room and board, along with a clothing allowance and 75 percent of their annual salaries. When Ibrahim Al-Muhtasib, from Jiddah, received his degree in commerce in 1954 from American University of Beirut, he became the first student with an Aramco scholarship to graduate from college.

The company retooled its scholarship program in the mid-1950s, committing itself to providing top-performing Saudis with university training in engineering, geology, chemistry and other fields that would qualify them to attain upper management positions. To fulfill this goal, Aramco determined that its scholarship students should study in the United States to earn their university degrees. The company paid the students' tuition and their full Aramco salary while they were attending university.

In 1959, Aramco elected the first two Saudis to its board of directors. Abdullah Tariki, Director General of Petroleum and Mineral Resources, and Hafiz Wahbah, an adviser to the late King 'Abd al-'Aziz and a former envoy to the United Kingdom, joined the other board members for an October meeting.

Aramco scholarship students meet with Harvey Baty, American University of Beirut's dean of students, in 1953 on the campus. The students are, left to right, Ibrahim Al-Muhtasib, Fahmi Basrawi, Sulaiman Rubaya, 'Abd Al-Qader Bubshait and Muhammad Salamah. The following year, Al-Muhtasib went on to become the first scholarship student to graduate with a four-year degree.



In addition to Al-Naimi, the group of students who studied at American universities in 1959 included fellow Aramco high-achievers Hamad A. Juraifani and Mustafa Al-Khan Abuahmad, and 'Abd Allah S. Busbayte, who went on to become a successful businessman. They all attended a six-week pre-college orientation session at Bucknell University in Pennsylvania. After that, Al-Naimi earned a bachelor's degree in geology from Lehigh University in Pennsylvania in 1962 and a master's in the same subject from Stanford University in California a year later. Juraifani stayed at Bucknell, where he earned a degree in chemical engineering in 1963, and later became an Aramco vice president and the first Saudi president of Aramco Services Company. Abuahmad attended Antioch College in Ohio to study business administration, and later became Aramco's second Saudi manager.

These students experienced life outside Saudi Arabia firsthand. They returned to their country with a broader vision and ability to engage issues and plan strategy more comprehensively. The group and those students who followed them were now prepared to make valuable contributions to Aramco.

As development programs continued within the country and educational opportunities became more widely available during the 1960s, Saudis were seeing themselves as citizens of the world. The coming decade, in fact, involved Aramco and Saudi Arabia more directly than ever before in world affairs.



Aramco began sending Saudi employees to U.S. universities and colleges in 1959. Discussing their upcoming departure with Paul Case, a Training Department veteran, are, left to right, Ali Al-Naimi, Mustafa Al-Khan Abuahmad, 'Abd Allah S. Busbayte

and Hamad A. Juraifani. The four young men left Dhahran in July, and after short visits to New York City and Washington, D.C., they attended a six-week orientation session at Bucknell University in Pennsylvania before beginning their regular studies.

## List of Abbreviations

|                  |   |                     |   |
|------------------|---|---------------------|---|
| <b>AAPG</b>      | American Association of Petroleum Geologists                            | <b>MRI</b>          | magnetic resonance imaging                                |
| <b>AMDP</b>      | Aramco Mobile Drilling Platform   | <b>NEDC</b>         | Near East Development Company                             |
| <b>Aminoil</b>   | American Independent Oil Company  | <b>NGI</b>          | Natural Gas Initiative                                    |
| <b>AOC</b>       | Aramco Overseas Company   | <b>NGL</b>          | natural gas liquids                                       |
| <b>APP</b>       | Associate Professional Program  | <b>NOC</b>          | national (or state-owned) oil company                     |
| <b>Aramco</b>    | Arabian American Oil Company  | <b>OAPEC</b>        | Organization of Arab Petroleum Exporting Countries        |
| <b>ASC</b>       | Aramco Services Company   | <b>OCC</b>          | Operations Coordination Center                            |
| <b>Bapco</b>     | Bahrain Petroleum Company   | <b>OPEC</b>         | Organization of Petroleum Exporting Countries             |
| <b>BP</b>        | British Petroleum Company   | <b>PDP</b>          | Personal Development Program                              |
| <b>bpd</b>       | barrels per day   | <b>PDP</b>          | Professional Development Program                          |
| <b>Casoc</b>     | California Arabian Standard Oil Company                                 | <b>POWERS</b>       | Parallel Oil Water and Gas Reservoir Simulator            |
| <b>CAT</b>       | computer-aided tomography   | <b>ppb</b>          | parts per billion   |
| <b>CDPNE</b>     | College Degree Program for Non-Employees                                | <b>PRC</b>          | Petroleum Reserves Company                                |
| <b>CERA</b>      | Cambridge Energy Research Associates                                    | <b>R&amp;D</b>      | research and development                                  |
| <b>E&amp;P</b>   | Exploration and Producing   | <b>SABIC</b>        | Saudi Arabia Basic Industries Corporation                 |
| <b>EXPEC</b>     | Exploration and Petroleum Engineering Center                            | <b>SAG</b>          | Saudi Arabian government                                  |
| <b>EXPEC-ARC</b> | Exploration and Petroleum Engineering Center's Advanced Research Center | <b>Samarec</b>      | Saudi Arabian Marketing and Refining Company              |
| <b>FREP</b>      | Fujian Refining and Petroleum Company Ltd.                              | <b>SAMCOM</b>       | Saudi Arab Manpower Committee                             |
| <b>GOSP</b>      | gas-oil separation plant  | <b>SASC</b>         | Saudi Aramco Cino Ltd.                                    |
| <b>GPS</b>       | global positioning system   | <b>Saudi Aramco</b> | Saudi Arabian Oil Company                                 |
| <b>IDD</b>       | Industrial Development Division   | <b>SCECO</b>        | Saudi Consolidated Electrical Company                     |
| <b>IEA</b>       | International Energy Agency   | <b>scfd</b>         | standard cubic feet per day                               |
| <b>IOC</b>       | international oil company   | <b>Socal</b>        | Standard Oil Company of California                        |
| <b>IPC</b>       | Iraq Petroleum Company  | <b>Socony</b>       | Standard Oil Company of New York                          |
| <b>IT</b>        | information technology  | <b>SSPC</b>         | Sinopec SenMei (Fujian) Petroleum Co. Ltd.                |
| <b>ITC</b>       | Industrial Training Center  | <b>SRAK</b>         | South Rub' al-Khali Company Ltd.                          |
| <b>Jersey</b>    | Standard Oil Company of New Jersey                                      | <b>Tapline</b>      | Trans-Arabian Pipeline or Trans-Arabian Pipe Line Company |
| <b>KAUST</b>     | King Abdullah University of Science and Technology                      | <b>TOEFL</b>        | Test for English as a Foreign Language                    |
| <b>KFUPM</b>     | King Fahd University of Petroleum and Minerals                          | <b>TPC</b>          | Turkish Petroleum Company                                 |
| <b>LPG</b>       | liquefied petroleum gas   | <b>UAE</b>          | United Arab Emirates                                      |
| <b>MGS</b>       | Master Gas System   | <b>ULCC</b>         | ultra-large crude carrier                                 |
| <b>MIT</b>       | Massachusetts Institute of Technology                                   | <b>VLCC</b>         | very large crude carrier                                  |
| <b>MRC</b>       | maximum reservoir contact (well)  | <b>ZHI</b>          | al-Zamil Heavy Industries                                 |

## Notes on Sources

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### CHAPTER ONE PROSPECTS

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#### CHAPTER THREE READING THE ROCKS

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#### CHAPTER FOUR THE WAR YEARS

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#### CHAPTER FIVE EXPANSION

**Opening spread** Saudi Aramco; **124** Saudi Aramco; **126** Thomas F. Walters/Saudi Aramco; **127** (top) Parker T. Hart/Saudi Aramco; **127** (bottom) Parker T. Hart/Saudi Aramco; **128** Robert Y. Ritchie; **129** (top) Robert Y. Ritchie; **129** (bottom) Saudi Aramco; **130** © Corbis; **131** Pivot Design; **132** Saudi Aramco; **133** (top) Saudi Aramco; **133** (bottom) Owen Oxley/Saudi Aramco; **134** Fred Porrett/Saudi Aramco; **135** (top) Saudi Aramco; **135** (bottom) Saudi Aramco; **136** Saudi Aramco; **137** (top) Saudi Aramco; **137** (bottom) Sam Logan/courtesy of Mildred Logan; **138** Owen Oxley/Saudi Aramco; **139** E. E. Seal/Saudi Aramco; **140-141** Fred Porrett/Saudi Aramco; **142** Thomas F. Walters/Saudi Aramco; **143** (left) Thomas F. Walters/Saudi Aramco; **143** (right) Thomas F. Walters/Saudi Aramco; **144** Fred Porrett/Saudi Aramco; **145** Pivot Design; **146** Thomas F. Walters/Saudi Aramco; **147** Don E. Dickey/Saudi Aramco; **148** Dorothy Miller/Saudi Aramco; **149** Thomas F. Walters/Saudi Aramco; **150** Thomas F. Walters/Saudi Aramco; **151** Courtesy of Muhammad Salamah.

#### CHAPTER SIX GROWING PAINS

**Opening spread** Saudi Aramco; **154** Owen Oxley/Saudi Aramco; **156** Fahmi Basrawi/Saudi Aramco; **157** Russell Lee/Saudi Aramco; **158** Abdullatif Yousif Al-Dossary/Saudi Aramco; **159** (top) Thomas F. Walters/Saudi Aramco; **159** (bottom) Matt Bunyan/courtesy of Marilyn Bunyan Wilkens; **161** Evelyn Squires/Saudi Aramco; **162** Khalil I. Rissas/Saudi Aramco; **163** Saudi Aramco; **164** Robert Y. Ritchie; **165** (left) Thomas F. Walters/Saudi Aramco; **165** (right) Thomas F. Walters/Saudi Aramco; **166-167** E. E. Seal/Saudi Aramco; **168** (top) Saudi Aramco; **168** (bottom) Robert Y. Ritchie; **169** Matt Bunyan/courtesy of Marilyn Bunyan Wilkens; **170** Thomas F. Walters/Saudi Aramco; **171** V. K. Antony/Saudi Aramco; **173** Thomas F. Walters/Saudi Aramco; **174** (top) Thomas F. Walters/Saudi Aramco; **174** (bottom) Thomas F. Walters/Saudi Aramco; **175** Saudi Aramco; **176** (top) Saudi Aramco; **176** (bottom) Thomas F. Walters/Saudi Aramco; **177** V. K. Antony/Saudi Aramco; **178** Robert Y. Ritchie; **179** (left) Thomas F. Walters/Saudi Aramco; **179** (right) Thomas F. Walters/Saudi Aramco; **180** Owen Oxley/Saudi Aramco; **181** Thomas F. Walters/Saudi Aramco; **182** E. E. Seal/Saudi Aramco; **183** Thomas F. Walters/Saudi Aramco; **184** Saudi Aramco; **185** (top) E. E. Seal/Saudi Aramco; **185** (bottom) Saudi Aramco; **186** Thomas F. Walters/Saudi Aramco; **187** Matt Bunyan/courtesy of Marilyn Bunyan Wilkens.

#### CHAPTER SEVEN BALANCING ACT

**Opening spread** Thomas F. Walters/Saudi Aramco; **190** Saudi Aramco; **192** (top) Saudi Aramco; **192** (bottom) Thomas F. Walters/Saudi Aramco; **193** Saudi Aramco; **194** (top) Saudi Aramco; **194** (center) Saudi Aramco; **194** (bottom) E. E. Seal/Saudi Aramco; **195** (left) Robert Y. Ritchie; **195** (right) Robert Y. Ritchie; **196** Don Holdeman/Saudi Aramco; **197** Thomas F. Walters/Saudi Aramco; **198** (top) Pivot Design; **198** (bottom) Thomas F. Walters/Saudi Aramco; **199** Don Holdeman/Saudi Aramco; **200** Thomas F. Walters/Saudi Aramco; **201** Photo by Hulton Archive/Getty Images; **202** (left) Saudi Aramco; **202** (right) Saudi Aramco; **203** (top) Owen Oxley/Saudi Aramco; **203** (bottom) Khalil I. Rissas/Saudi Aramco; **204** © Corbis; **205** © Corbis; **206** Khalil Al-Nasr/Saudi Aramco; **207** Bep McCarthy/courtesy of Jim and Bep McCarthy; **208-209** V. K. Antony/Saudi Aramco; **210** Thomas F. Walters/Saudi Aramco; **211** Saudi Aramco; **212** Owen Oxley/Saudi Aramco; **213** V. K. Antony/Saudi Aramco.



## Index

Page numbers in **blue** indicate *Energy to the World, The Story of Saudi Aramco* Volume One. Page numbers in **red** indicate *Energy to the World, The Story of Saudi Aramco* Volume Two. Page numbers in **bold** indicate charts, *italics* indicate photographs, and page numbers followed by “n” indicate notes.

### A

Abadan, [18](#), [20](#), [163](#)  
 Al-Abbad, Ali, [132](#), [132](#)  
 Al-‘Abbusi, Muhammad Jawad, [5](#)  
 Al-Abdulwahed, Khalid, [155](#), [155](#)  
 ‘Abd al-‘Aziz (King). See Al Sa‘ud, ‘Abd al-‘Aziz ibn ‘Abd al-Rahman (King)  
 ‘Abd al-Aziz, Faysal, [6](#)  
 Abd Allah. See Philby, Harry St. John Bridger (“Abd Allah”)  
 ‘Abd Allah, Rashid ibn, [143](#), [143](#)  
 Abdel Mohsin, Sami A, [137](#)  
 Abdulqadir, Abdulrahman M., [136](#)  
 Al-‘Abid, ‘Abdal ‘Aziz, [11](#), [11](#), [47](#), [47](#)  
 Abqaiq, [xii](#), [73](#), [81](#), [101](#), [105](#), [106](#), [109](#), [110–111](#), [116](#), [128](#), [136](#), [137](#), [142](#), [143](#), [143](#), [144](#), [146](#), [162](#), [162](#), [168](#), [169](#), [171](#), [179](#), [180](#), [16](#), [20](#), [27–28](#), [28](#), [49](#), [52](#), [62](#), [63](#), [64](#), [64](#), [72](#), [87](#), [89](#), [89](#), [120](#), [125](#)  
   downstream operations, [190](#)  
   fire at, [63](#), [64](#), [64](#)  
   upstream operations, [182](#)  
 Abqaiq Mechanical Shop, [102](#), [102](#)  
 Abuahmad, Mustafa, [21](#), [33](#), [46](#)  
 Abuahmad, Mustafa Al-Khan, [190](#), [190](#), [212](#), [213](#), [213](#)  
 Abu ‘Ali, [81](#)  
 Abu al-Naft. See Holmes, Frank “Abu al-Naft, Father of Petroleum” (Major)  
 Abu Dhabi, [206](#), [41](#)  
 Abu Hadiya, [14](#), [14](#), [88](#), [105–126](#), [109](#), [147](#)  
 Abu Hijlah, Omar, [159](#), [159](#)  
 Abu Jifan, [113](#), [150](#)  
 Abu Khadrah, Najati, [190](#), [190](#)  
 Abu Nahyah, Hamad, [168](#), [168](#)  
 Aburqubah, ‘Ali Dakheel, [11](#), [11](#)  
 Abu Sa‘fah, [16](#), [17](#), [17](#), [82](#)  
 Abyssinia, [37](#)  
 acid gas, [183](#)  
 acritarchs, [170](#), [170](#)  
 Aden, [111](#), [10](#)  
 Advanced Degree Program, [146](#)  
 Advanced Fire Training Center, [142](#), [142](#)  
 Advanced Industrial Training Center, [172](#)  
 aerial reconnaissance, [68–73](#)  
 Al-‘Afaleq, Ibrahim A., [47](#), [47](#)  
 Afifi, Abdulkader, [156](#)  
 Aframax-class vessels, [155](#)  
 agreement in al-‘Uqayr, [14–16](#), [35](#), [42](#), [43](#)  
 agriculture. See farming  
 A-group students, [46](#)

Ahmad, Sa‘id, [151](#), [151](#)  
 ‘Ain Dar, [144](#), [144](#), [145](#), [145](#), [146](#), [154](#), [200](#), [200](#), [31](#), [49](#)  
 ‘Ain Dar Gas Injection Plant, [210](#), [210](#)  
 air conditioning, [48](#), [83](#), [86](#), [133](#), [159](#), [168](#)  
 air quality, [158](#)  
 air raid shelters, [107](#), [107](#)  
 Al-Ajaji, Abdulaziz Omer, [178](#), [128](#)  
 Al-Ajam, Saleh A., [9](#), [9](#)  
 Ajmi, Nassir M., [13](#), [172](#), [47](#), [47](#), [92](#), [102](#), [108](#), [111](#)  
 Alaska, [106](#), [23](#), [79](#), [80](#), [134](#)  
 El ‘Alat Dome, [73](#)  
 Aleppo College, Syria, [192](#)  
 Alexander, T. C., [113](#), [179](#), [179](#)  
 Alexandria, Egypt, [69](#)  
 Algemeene Exploratie Maatschappij, N. V., [47](#), [47](#)  
 Algeria, [41](#)  
 ‘Ali, ‘Abd Allah, [6](#)  
 al-‘Ali, Khidr, [64](#), [64](#)  
 Al-Ali, Mohammed Saeed Salman, [102](#)  
 Al-Ali, Muhammad Sa‘id, [11](#), [11](#)  
 Al-Ali, Mustafa Naser, [146](#), [146](#)  
 ‘Ali al-Kaylani, Rashid, [97](#)  
 ‘Ali al-Khajjah, ‘Abd Allah Haji, [149](#), [149](#)  
 Ali Alturki, Khalid, [47](#), [47](#)  
 alkylamine, [183](#)  
 alliances, building, [129–131](#)  
 Allies (World War II), [119](#), [121](#), [125](#)  
 Allman-Ward, Patrick, [141](#)  
 “All the King’s Oil” (Marquis), [55](#)  
 Almana, Muhammad, [181](#)  
 Alomair, Aysa and Deema, [152](#), [152](#)  
*Alphard Star* (tanker), [83](#)  
 Alqurashi, May, [165](#)  
*Altair Star* (tanker), [108](#)  
*Altarf* (tanker), [155](#)  
 Alter, Harry, [149](#)  
 alternative energy sources, [161](#)  
 Altowell, Khalid F., [158](#)  
 Altunisi, Nabilah M., [75](#), [75](#), [77](#)  
 Aluminum Products Co. (ALUPCO), [51](#), [51](#)  
 Ambah, Saleh, [14](#)  
 AMDP-2 (Aramco Mobile Drilling Platform 2), [2](#), [2](#)  
 America. See United States of America (USA)  
 American Association of Petroleum Geologists (AAPG), [146](#), [147](#)  
 American Independent Oil Co. (Aminoil), [138](#), [201](#)

American Petroleum Institute (API), [27](#), [74](#)  
 American University, Washington, D.C. (USA), [77](#)  
 American University in Cairo, [59](#)  
 American University of Beirut (AUB), [98](#), [176](#), [192](#), [192](#), [211](#), [212](#), [212](#)  
 Amoco, [125](#)  
 Amouzegar, Jamshid, [39](#)  
 Al-Anaysha, Abdullah Yusuf, [99](#), [101](#)  
 Al-Anaysha, Ibrahim, [101](#)  
 Anderson, Floyd, [80](#)  
 Anglo-Iranian Oil Co., [47](#), [47](#), [168](#), [197](#), [201](#), [202](#)  
 Anglo-Persian Oil Co., Ltd., [15](#), [16](#), [17](#), [18](#), [19](#), [20](#), [21](#), [26](#), [47](#), [50](#)  
 Anglo-Saudi Treaty of 1915 (Darín or Qatíf Treaty), [6](#)  
 anhydrite, [79](#), [79](#), [82](#)  
 Animal Farm, [113](#), [115](#), [115](#)  
 Annual Arab-U.S. Policymakers Conference, [160](#)  
 Anthony, John Duke, [72](#), [72](#)  
 anticline traps, [174](#), [174](#)  
 Antioch College, Ohio (USA), [212](#)  
 Antonius, George, [37](#)  
 AOC (Aramco Overseas Co., Aramco Purchasing Co.), [193](#), [193](#), [153](#)  
 API (American Petroleum Institute), [27](#), [74](#)  
 APP (Associate Professional Program), [73](#)  
 Apprenticeship Program for Non-Employees, [135](#), [135](#)  
 Aqil, Hullayil, [8](#), [8](#)  
 Arab Congress in Paris (1913), [12](#)  
 Arabian American Little League, [138](#)  
 Arabian American Oil Co. (Aramco), [55](#), [94](#), [101](#), [102](#), [107](#), [111](#), [113](#), [115](#), [116](#), [117](#), [118](#), [120](#), [3–4](#), [5](#), [6](#), [7](#), [10](#), [10](#), [11](#), [13](#), [16](#), [20](#), [21](#), [22](#), [23](#), [24](#), [29](#), [30](#), [31](#), [32](#), [33](#), [34](#), [34](#), [36](#), [38](#), [39](#), [41](#), [42](#), [44](#), [46](#), [49](#), [50](#), [51](#), [52](#), [53](#), [54](#), [59](#), [60](#), [62](#), [63](#), [64](#), [69](#), [70](#), [71](#), [72](#), [75](#), [77](#), [78](#), [82](#), [83](#), [88](#), [89](#), [205](#). See also “Aramcons”; California Arabian Standard Oil Co. (Casoc), Chevron, Saudi Arabian Oil Co. (Saudi Aramco); Standard Oil Co. of California (Socal), Standard Oil Co. of New York (Socony); Standard Oil of New Jersey (Jersey, Exxon), The Texas Company (Texaco)  
 annual oil production, [198](#)  
 Aramco world for Saudis, [14–16](#)  
 board of directors, Saudis named to, [210](#), [211](#), [217](#)  
 headquarters move to Dhahran, [202](#), [202](#), [210](#)  
 logo, [136](#), [136](#)  
 name change, [92–93](#), [95](#), [205](#)  
 Saudi government, frayed relationship, [162–163](#), [165](#), [168](#)  
 Saudi ownership of, [156](#), [177](#), [29](#), [40–41](#), [45–46](#), [64](#), [69](#), [159](#)  
 social responsibility evolution, [164](#)  
 Arabian Gulf, [18](#), [75](#), [102](#), [122](#), [122](#), [206](#), [33](#), [41](#), [103–104](#), [103](#), [104](#), [105](#), [157](#)  
 downstream operations, [185](#), [191](#)  
 upstream operations, [182](#)  
 Arabian Heavy crude oil, [40](#)  
 Arabian Light crude oil, [40](#), [42](#), [44](#), [52](#), [70](#), [89](#), [103](#), [142](#), [144](#), [147](#), [177](#)  
*Arabian Nights*, *The* (fable), [135](#)  
 Arabian Peninsula, [75](#), [131](#), [173](#)  
 Arabian Research Division, [148](#), [149](#), [150](#)  
 Arabian Shelf, [75](#), [81](#), [173](#)  
 Arabian Shield, [75](#)  
*Arabian Sun*, *The*, [55](#)  
*Arabian Sun and Flare*, [136](#)  
 Arabian Super Light crude oil, [96](#), [177](#)  
 Arab Industrial Development, [149](#), [181](#)  
 Arab-Israeli tensions, [20](#), [22](#), [42–43](#)  
 Arab-Israeli War of 1948, [132](#), [142](#), [199](#)  
 Arab-Israeli War of 1967, [205](#)  
 Arab-Israeli War of 1973, [29](#)  
 Arab League, [196](#)  
 Arab Oil Congress in Cairo, [4](#)  
 Arab Petroleum Congress, [5](#). See also Organization of Petroleum Exporting Countries (OPEC)  
 Arab Preparatory School (Jabal School for Boys), [113](#), [138](#), [153](#), [155](#), [156](#), [156](#), [168](#), [168](#), [172–173](#), [175](#), [177](#)  
 Arab Revolt against the Turks in 1916, [6](#)  
 Arab Zone, [89](#), [105](#), [87](#)  
 Arab Zones A–D, [144](#), [146](#)  
 Aramco. See Arabian American Oil Co.

Aramco Mobile Drilling Platform 2 (AMDP-2), [2](#), [2](#)  
 “Aramcons,” xi–xii, [150](#), [170](#), [170](#), [15](#), [15](#), [16](#), [160](#), [160](#). See also Arabian American Oil Co. (Aramco); Saudi Arabian Oil Co. (Saudi Aramco)  
 visited by King ‘Abd al-‘Aziz, [160](#), [161](#), [161](#), [207](#)  
 visited by King ‘Abd Allah, [165–166](#), [167](#), [167](#)  
 visited by King Sa‘ud, [207](#), [207](#)  
 Aramco Overseas Co. (AOC, Aramco Purchasing Co.), [193](#), [193](#), [153](#)  
 Aramco Services Co., [124](#), [124](#), [158](#)  
*Aramco World*, [15](#). See also *Saudi Aramco World*  
 Argus Sour crude Index, [162](#)  
 Aridi, Mohamed, [113](#)  
 Arizona State University (USA), [71](#), [71](#)  
 Arnot, Anne, [171](#)  
 Arnot, Elizabeth, [165](#), [165](#), [171](#)  
 Arnot, Paul, [100](#), [109](#), [111](#), [143](#), [171](#), [21](#), [21](#), [21](#)  
 aromatics, [187](#), [192](#), [193](#), [193](#)  
 Al-Arrayed, Thuraya, [77](#), [77](#)  
 art contest, children’s, [94](#), [94](#)  
 Al-As‘ad, Saleh, [146](#), [146](#)  
 Ashary, Assem (Captain), [108](#), [108](#)  
 Al-Ashgar, Sa‘ud Abdulrahman, [72](#), [72](#)  
 ‘Ashoor, Saif Al-Deen, [148](#)  
 Asia, [203](#), [134–135](#), [153](#), [161](#)  
 Asker, Mohammad N., [145](#), [145](#)  
 asphalt seeps, [18](#), [26](#)  
 associated gas, [144](#), [147](#), [183](#)  
 Associate Professional Program (APP), [73](#)  
 Al-Atasi, Hashem, [191](#)  
 Al-Atiq, Muhammad, [64](#), [64](#)  
 Atlantic Refining Co., [22](#)  
 Australia, [6](#), [18](#), [113](#), [138](#), [193](#)  
 automobiles, [19](#), [19](#), [23](#), [126](#), [40](#), [40](#), [158](#)  
 AvinOil Industrial Commercial and Maritime Oil Co., S. A., [107](#)  
 Al-Awami, Amal A., [115](#), [115](#)  
 Al-Awami, Fatema H., [77](#), [77](#)  
 ‘Awny, Muhammad Husain, [185](#)  
 Al-‘Awwami, Haider, [74](#)  
 Al-‘Awwami, Ni‘mah S. M., [47](#), [47](#)  
 Axis Powers (World War II), [95](#), [97](#), [99](#), [99](#), [101](#), [108](#), [113](#), [116](#)  
*Al-Ayyam Al-Jamilah*, [100](#)  
 Al-‘Aziz, ‘Abd, [181](#)  
 Al-Aziz, Muhammad ibn ‘Abd, [186](#), [186](#)  
 al-‘Aziziyah, [160](#)  
 Azerbaijan, [20](#), [21](#), [21](#), [23](#)  
 ‘Aziz, Zaid Abdul, [9](#), [9](#)

## B

Baba Gurgur, [22](#), [23](#)  
 bacteria to remove sulfur, [139](#), [139](#)  
 Badanah, [134](#), [134](#)  
 Badghaish, Usama, [147](#)  
 Baghdad, [18](#), [21](#), [40](#), [69](#), [177](#), [5](#)  
 al-Bahah, [43](#), [43](#), [178](#)  
 Bahrabi, Bassam H., [151](#), [151](#)  
 Bahrain, [7](#), [9](#), [12](#), [16](#), [22](#), [23](#), [24–25](#), [26](#), [27](#), [28–29](#), [31](#), [31](#), [35](#), [39](#), [41](#), [42](#), [43](#), [46](#), [46](#), [47](#), [47](#), [48](#), [49](#), [50](#), [61](#), [62](#), [62](#), [63](#), [64](#), [69](#), [72](#), [73](#), [76](#), [78](#), [79](#), [80](#), [80](#), [84](#), [90](#), [108](#), [133](#), [138](#), [143](#), [169](#), [182](#), [87](#)  
 Bahrain Petroleum Co. (Bapco), [29](#), [30](#), [30](#), [31](#), [31](#), [39](#), [41](#), [48](#), [48](#), [73](#), [76](#), [78–79](#), [90](#), [108](#), [143](#), [162](#), [169](#), [182](#), [183](#)  
 Bahrain Pipeline, [185](#)  
 Bait al-Americani, [97](#), [97](#)  
 Bait al-Baghdadí, [97](#), [97](#)  
*Bait al-Sha‘r* (house of hair), [13](#)  
 Baku, [20](#), [21](#), [21](#), [23](#)  
 Baljurashi, [178](#)  
 Al-Baluchi, Ali, [172](#), [185](#), [185](#), [46](#)  
 Banban, [57](#)  
 Bapco. See Bahrain Petroleum Co.  
*barastis*, [9](#), [77](#), [78](#), [78](#), [111](#), [113](#)  
 Barge 136 *Queen Mary*, [37](#), [37](#)  
 Barger, Kathleen, [84](#), [104](#)

Barger, Thomas C., [67](#), [67](#), [84–85](#), [84](#), [87](#), [102](#), [104](#), [104](#), [105](#), [127](#), [137](#), [148](#), [150](#), [172](#), [210](#), [210](#), [3](#), [6](#), [6](#), [16](#), [20](#), [21](#), [21](#), [24](#), [24](#)  
 company leadership, [204](#), [205](#)  
 “Planning Guides for Aramco as a Corporation,” [3](#), [6](#), [24](#)  
 Barger, Tim, [87](#)  
 Barracano, Henry “Hank,” [35](#)  
 Barran, David, [40](#)  
 Bartlett, Bryan, [103](#), [112](#)  
 “basement rocks,” [75](#)  
 “basket” of prices, [89](#)  
 Basra, [16](#), [69](#)  
 Basrawi, Fahmi, [156](#), [172](#), [176](#), [177](#), [212](#), [212](#)  
 Al-Bassam, Faysal M., [46](#), [46](#), [72](#), [72](#)  
 Al-Bassam, Nabil I., [111](#)  
 Bataweel, Omar, [11](#), [11](#)  
 Baty, Harvey, [212](#), [212](#)  
 Bechtel-McCone-Parsons, [115](#), [116](#), [132–133](#), [134](#), [136](#), [182](#), [183](#)  
 Bedouin. See also guides (Bedouin), [5](#), [13–14](#), [14](#), [15](#), [15](#), [17](#), [39](#), [55](#), [68](#), [70](#), [72](#), [112](#), [113](#), [134](#), [136](#), [136](#), [144](#), [144](#), [148](#), [148](#), [150](#), [150](#), [179](#)  
 relators, [148](#), [148](#), [149](#)  
 Beijing, [153](#)  
 Beirut, [33](#), [71](#), [163](#), [192](#), [199](#), [7](#)  
 Beit Meri, [41](#)  
 Bell, Gertrude, [3](#)  
 benzene, [192](#), [193](#), [193](#)  
 Berg, Ernie, [102](#), [103](#), [104](#), [104](#)  
 Berg, W. H., [41](#)  
 Berri, [16](#), [37](#), [37](#), [81](#), [87](#), [114](#), [143](#), [158](#)  
 downstream operations, [190](#)  
 operations data, [199](#), [199](#)  
 B-group students, [46](#)  
 “Big Board” in Operations Coordination Center (OCC), [154](#), [154](#), [184](#), [184](#)  
*Big Oil Man from Arabia* (Cheney), [133](#)  
*Al-Bilad*, [198](#), [7](#)  
 Biltagi, Bader, [194](#), [196](#)  
 biotechnology, [139](#), [139](#)  
*Biotoypes of the Western Arabian Gulf: Marine Life and Environment of Saudi Arabia*, [157](#)  
*Birds of the Eastern Province of Saudi Arabia*, [157](#)  
 Bir‘ Shubat, [43](#), [43](#)  
 Bitter Lake, [120](#)  
 “Black” Monday (USA stock market crash), [37](#), [37](#)  
 blending crude oil grades (Qatif), [142](#), [143](#), [143](#), [144](#), [144](#), [190](#)  
 board of directors, Saudis named to Aramco, [210](#), [211](#), [211](#)  
 bombing of Dhahran by Italy, [106](#), [106](#), [107](#), [107](#), [108](#), [109](#)  
*Book of Khalid* (Rihani), [12](#)  
 Borneo, [23](#)  
 boys school (Arab Preparatory School, Jabal School for Boys), [113](#), [138](#), [153](#), [155](#), [156](#), [156](#), [168](#), [168](#), [172–173](#), [175](#), [177](#)  
 BP. See British Petroleum  
 Bramkamp, Richard A., [104](#), [133](#), [137](#), [146](#)  
 Brent Weighted Average price for North Sea oil, [89](#)  
 Bretton Woods, New Hampshire (USA), [193](#)  
 Brewster Committee (U.S. Senate committee), [162](#)  
 British Admiralty’s Hydrographic Department, [90](#)  
 British government, [3–4](#), [6](#), [8](#), [8](#), [14](#), [15](#), [16](#), [19](#), [20](#), [21](#), [26](#), [28–29](#), [42](#), [48](#), [49](#), [50](#), [52](#), [55](#), [96](#), [97](#), [112](#), [119](#), [130](#), [204](#), [205](#), [206](#)  
 British Oil Development Co., [47](#), [47](#)  
 British Petroleum (BP), [4](#), [5](#), [39](#), [41](#), [45](#), [104](#), [125](#)  
 Brougham, Robert I., [7](#), [7](#), [20](#), [24](#), [204](#), [205](#)  
 Brown, Art B., [63](#), [63](#)  
 Brown, Edna, [83](#)  
 Brown, Ron, [169](#), [169](#)  
 Brown University in Providence (USA), [13](#)  
 Brunton compasses, [66](#)  
 Al-Buainain, Khalid G., [107](#), [156](#), [156](#)  
 Bubshait, ‘Abd Al-Qader, [212](#), [212](#)  
 Al-Bubshait, ‘Abd al-Rahman, [47](#), [47](#)  
 Bucknell University, Pennsylvania (USA), [212](#), [213](#)  
 Buday, ‘Abd Al-Aziz ibn Ahmad, [176](#), [176](#)  
 Bukhara, [40](#)

Bunyan, Marilyn, [169](#), [169](#)  
 Buqqah, [143](#), [143](#)  
 Buraimi Oasis, [206](#), [206](#)  
 Burchfiel, Hugh L., [63](#), [63](#), [64](#), [69](#), [70](#)  
 Burgan, [23](#), [126](#)  
 Burleigh, William, [106](#), [108](#), [148](#)  
 Burmah Oil, [18](#)  
 Busbayte, ‘Abd Allah S., [190](#), [190](#), [212](#), [213](#), [213](#)  
 butadiene, [192](#)  
 butane, [190](#), [192](#). See also Natural Gas Liquids (NGLs)  
 Butler, Joyce, [169](#), [169](#)  
 “buyer’s market for oil is over,” [38–40](#)

## C

Cadman, Sir John, [15](#), [26–27](#), [47](#), [48](#)  
 Cairo, [40](#), [69](#), [127](#), [196](#)  
 Calgary, Canada, [23](#)  
 California (USA), [23](#), [26](#), [41](#), [182](#)  
 California Arabian Standard Oil Co. (Casoc), [9](#), [63–66](#), [68](#), [69](#), [71](#), [72](#), [73](#), [76](#), [77](#), [78](#), [79](#), [80](#), [84](#), [88](#), [89](#), [90](#), [95–96](#), [96](#), [97](#), [97](#), [98](#), [101](#), [104](#), [109](#), [110](#), [111](#), [113](#), [116](#), [118](#), [118](#), [179](#), [182](#), [183](#), [195](#), [136](#). See also Arabian American Oil Co. (Aramco)  
 facilities visited by King ‘Abd al-‘Aziz, [88](#), [88](#)  
 name change, [55](#), [101](#), [113](#), [115](#), [118](#), [118](#), [205](#)  
 California Texas Oil Co., Ltd. (Caltex), [79](#)  
 Cambrian Period, [172](#)  
 Cambridge, [145](#)  
 Cambridge Energy Research Associated (CERA), [135](#)  
 Campbell, William S. “Sandy,” [191](#), [193](#)  
 Canada, [23](#), [126](#), [138](#), [104](#)  
 Cantrell, Dave, [76](#), [117](#)  
 capacity concerns, [143](#)  
 Cape of Good Hope, [205](#), [33](#)  
 capital program, [30](#), [133](#), [141](#), [143](#), [150](#), [150–151](#), [152](#)  
 cap rocks, [174](#)  
*Caravan, The (Al-Qafilah)*, [158](#)  
 carbonate geologists, [177](#)  
 carbonates, [82](#)  
 carbon capture and sequestration, [158](#)  
 carbon dioxide, [183](#)  
 carbon management, [158](#)  
 Carpenter, Nellie, [83](#)  
 Case, Paul, [213](#), [213](#)  
 Casoc. See California Arabian Standard Oil Co.  
 Caspian Sea, [21](#)  
 catalytic cracking, refining process, [188](#)  
 catalytic reforming, refining process, [188](#)  
 CAT (computer-aided tomography) scans, [116](#)  
 CDPNE (College Degree Program for Non-Employees), [111](#), [111](#)  
 Center for Remote Sensing at Boston University (USA), [145](#)  
 Central Ghawar Well Services Division, [137](#)  
 Central Province, [127](#)  
 CERA (Cambridge Energy Research Associated), [135](#)  
 Chamberlin, Edith, [169](#)  
 Cheney, Michael Sheldon, [133](#)  
 Chevron (Standard Oil of California), [29](#), [41](#), [124](#), [158](#).  
 See also Arabian American Oil Co. (Aramco)  
 Chevron Geophysical, [68](#)  
 children’s art contest, [94](#), [94](#)  
 Childs, J. Rives, [196](#)  
 Childs, Marquis, [55](#)  
 China, [40](#), [78](#), [134](#), [141](#), [143](#), [153](#), [156](#), [156](#), [157](#), [160](#)  
 downstream operations, [189](#)  
 chronometers, [66](#)  
 Churchill, Winston, [19](#), [20](#), [119](#), [136](#)  
 Clark, Henry, [106](#)  
 cleaner-burning fuels, [158](#)  
 clerical training, [59](#), [59](#)  
 climate change, [158](#)  
 coal, [126](#)  
 coins, first official, [195](#)

coking, refining process, [187](#)  
 Cold War, [171](#), [186](#), [193](#)  
 College Degree Program for Non-Employees (CDPNE), [111](#), [111](#)  
 College Fast Track Program, [71–72](#)  
 College of American Pathologists, [151](#)  
 College of Arabic Language, [173](#)  
 College of Arts in Baghdad, [5](#)  
 College of Petroleum and Minerals (University of Petroleum and Minerals, King Fahd University of Petroleum and Minerals), [173](#), [173](#), [179](#), [13–14](#), [20](#), [48](#), [72](#), [72](#), [74](#), [142](#), [157](#)  
 College of Shari'ah (Umm al-Qura University, Makkah), [173](#)  
 College Preparatory Program, [152](#)  
 Collier, Harry D., [204](#), [205](#)  
 Colorado School of Mines (USA), [111](#)  
 Common Brothers, [36](#)  
 Comodoro Rivadavia, Argentina, [23](#)  
 Compagnie Française des Pétroles, [21](#), [130](#)  
 company leadership, Saudi Aramco, [111](#), [204–205](#)  
 compasses, [66](#), [83](#)  
 computer-aided tomography (CAT) scans, [116](#)  
 Computing Technology, [74](#)  
 concessions for Middle Eastern oil, [47](#), [47](#), [95](#), [98](#), [104](#), [127](#), [68](#), [69](#), [205](#)  
 condensate (liquid hydrocarbons), [157](#), [183](#)  
 Consolidated Contractors Co., [146](#)  
 consolidation of territories by King 'Abd al-'Aziz, [3–4](#), [5](#), [14](#), [120](#)  
 Constantinople College for Girls, [40](#)  
 construction surge, [30](#), [32](#), [34–35](#), [36](#), [50](#), [52–53](#), [78](#), [82](#), [83](#), [92](#), [96](#), [101](#), [120](#), [125](#), [126](#), [133](#), [137](#), [140](#), [143](#), [144](#), [144](#), [146](#), [147](#)  
 Consulting Services, [109](#)  
 Convent, Louisiana (USA), [95](#)  
 conversion processes, refining process, [187](#)  
 Cooper, Nan, [169](#), [169](#)  
 Core Lab, [177](#), [177](#)  
 core samples, [170](#), [176](#), [177](#), [177](#)  
 Core Store (Well Samples and Laboratory Unit), [117](#), [117](#)  
 Corporate Planning, [168](#), [77](#), [78](#)  
 Cox, Sir Percy, [3–4](#), [4](#), [6](#), [9](#), [14](#)  
 Crane, Charles R., [36](#), [37](#), [39](#), [40](#), [40](#)  
 Cretaceous Period, [41](#), [173](#), [173](#)  
 Crew, Bob, [64](#), [64](#)  
 cross-cultural relationships (Saudi and Western), [148–150](#), [151](#), [151](#), [156–157](#), [171](#), [77–78](#), [166](#)  
 crude oil classifications, [39](#), [152](#), [162](#)  
 currency complications, [193](#), [193](#), [195](#), [210](#)  
 Curry, J. M., [7](#), [7](#)  
 Cushing, Oklahoma (USA), [162](#)

## D

*D. G. Scofield* (tanker), [90](#), [91](#), [98](#), [185](#)  
 Daggy, Richard, [179](#)  
 Dahl Hit, [79](#), [79](#), [81–82](#)  
 Dahna sands, [39](#), [56](#)  
 Dajani, M. S., [42](#)  
 Damascus, [6](#), [8](#), [8](#), [191](#)  
 Dammam area, [12](#), [137](#), [174](#), [179](#), [181](#), [183](#), [14](#), [51](#)  
 Dammam Dome, [17](#), [23](#), [42](#), [42](#), [49](#), [62](#), [64](#), [66](#), [66](#), [70](#), [71](#), [72](#), [73](#), [73](#), [76](#), [76](#), [77](#), [78](#), [80](#), [82](#), [83](#), [84](#), [86](#), [87](#), [87](#), [89](#), [90](#), [95](#), [99](#), [105](#), [105](#), [108](#), [111](#), [160](#). *See also* Well No. 7 (Dammam Dome)  
   three-dimensional model, [168](#), [168](#)  
   Well No. 12 fire, [12](#), [98–100](#), [98](#)  
   Well No. 43 (non-associated gas), [86](#), [87](#)  
 Dammam Girls' School, [12](#), [12](#)  
 Dammam Laundry Business, [181](#)  
 Dammam Port, [136](#), [140](#), [140](#), [36](#)  
 Daoud, Bishara, [98](#), [163](#)  
 Daoudi, M. S., [42](#)  
 D'Arcy, William Knox, [18–19](#), [18](#), [20](#)  
 Darin, [62](#)  
 Darin Treaty, [6](#)  
 Al-Darwish, Abbas, [132](#), [132](#)  
 date palm oases, [8](#), [9](#), [12](#). *See also* al-Hasa

Davies, Fred A., [29](#), [29](#), [30](#), [31](#), [43](#), [49](#), [62](#), [73](#), [78](#), [80](#), [81](#), [106](#), [142](#), [197](#), [201](#), [36](#)  
   company leadership, [204](#), [205](#)  
 Davis, Edmond, [48](#)  
 al-Dawasir tribe, [9](#)  
 Al-Deen, Mustafa Husam, [148](#)  
 de-ethanizer columns, [190](#)  
 Delaware City, Delaware (USA), [95](#), [124](#)  
 Delft University of Technology, [146](#), [146](#)  
 delineation wells, [180](#)  
 Dell'Oro, Walter, [136](#), [31–32](#)  
 demand for oil. *See* supply and demand  
 de-mothballing production facilities, [102](#), [102](#)  
 Denmark, [108](#)  
 depentanizer columns, [190](#)  
 desalting process, [182](#)  
 Deutsche Bank, [40](#)  
 Devonian Period, [172](#)  
 Dhahran, [42](#), [42](#), [58](#), [58](#), [66](#), [66](#), [75](#), [76](#), [77](#), [78](#), [78](#), [81](#), [83](#), [86](#), [88](#), [88](#), [89](#), [90](#), [95](#), [100](#), [101](#), [101](#), [102](#), [104](#), [105](#), [106](#), [106](#), [107](#), [107](#), [108](#), [109](#), [111](#), [113](#), [116](#), [119](#), [119](#), [125](#), [126](#), [126](#), [127](#), [129](#), [132](#), [133](#), [136](#), [137](#), [137](#), [138](#), [142](#), [148](#), [149](#), [152](#), [152](#), [159](#), [159](#), [160](#), [162](#), [163](#), [164](#), [165](#), [165](#), [166](#), [166–167](#), [168](#), [169](#), [171](#), [172](#), [173](#), [174](#), [175](#), [175](#), [176](#), [177](#), [180](#), [184](#), [185](#), [192](#), [192](#), [193](#), [194](#), [203](#), [203](#), [207](#), [207](#), [213](#), [5](#), [5](#), [13](#), [20](#), [20–23](#), [24](#), [24](#), [30](#), [30](#), [48](#), [78](#), [78](#), [102](#), [103](#), [109](#), [109](#), [125](#), [125](#), [127](#), [165](#)  
 Dhahran Ahliyyah School, [94](#)  
 Dhahran Industrial Center, [135](#), [135](#)  
 Dhour El Choueir, [71](#)  
*dhows*, [9](#), [12](#), [62](#), [77](#)  
 Dialdin, Ali, [34](#), [46](#)  
 Dialdin, Hiba A., [145](#), [145](#)  
 Dickson, H.R.P. (Colonel), [36](#)  
 diesel, [187](#), [187](#)  
 Al-Din, Ibrahim Nur, [185](#)  
*dirahs*, [15](#)  
 al-Dir'iyyah, [7](#)  
 directional drilling, [180](#)  
 Directorate of Education, [173](#)  
 disabling injury rate, [197](#)  
*Discovery!* (Stegner), [100](#)  
 "Discovery of the Ghawar Field" (Keith), [146](#)  
 distillation column, refining process, [187](#)  
 distillation units, [125](#)  
 distribution, downstream operations, [191](#)  
 diversification and downstream operations, [93](#), [95](#), [107](#)  
 Doha Debates in Qatar in 2009, [77](#)  
 Domerqc, John, [108](#), [108](#)  
 domestic integration, [108–109](#)  
 domestic operations map, [195](#)  
 dormitory housing, [159](#), [165](#), [171](#), [159](#)  
 Al-Dosari, 'Abd al-Rahman, [172](#)  
 Al-Dosari, Ahmad, [172](#)  
 Al-Dosari, Sulaiman, [172](#)  
 Al-Dossari, Abdullah, [155](#), [155](#)  
 Al-Dossary, Fahd, [64](#), [64](#)  
 Al-Dossary, Mubarak N., [115](#), [115](#)  
 Al-Dossary, Muhammad ibn Ahmad, [181](#)  
 Al-Douhan, Douhan, [72](#), [72](#)  
 double-hull tankers, [155](#), [191](#), [191](#)  
 Douglas Aircraft, [120](#), [160](#)  
 Al-Dowayan, Nasser Mohammed, [94](#), [94](#)  
 Al-Dowsari, Khalifah, [151](#), [151](#)  
 Dow Chemical Co., The, [77](#), [163](#), [193](#)  
 downstream operations, [184–193](#). *See also* operations data; upstream operations  
   distribution, [191](#)  
   diversification and, [93](#), [95](#), [107](#)  
   gas fractionation, [190](#)  
   Oil Supply Planning and Scheduling (OSPAS), [154](#), [154](#), [184](#)  
   petrochemicals, [192–193](#)  
   pipelines, [185](#)  
   refining, [187–189](#)  
   terminals, [185–186](#)

Doyle, Pat, [86](#), [86](#)  
 Dreyfus, Felix W., [63](#), [63](#), [64](#), [71](#)  
 drill cuttings, [170](#), [176](#)  
 drillers (Saudi), [101](#), [102](#), [102](#), [154](#), [154](#)  
 drilling and reservoir engineering, [180–181](#)  
 Drilling and Workover, [151](#), [151](#)  
 drilling wells, [180](#), [180](#)  
 drillpipe, [39](#), [39](#)  
 Drucker, Fred H., [134](#), [21](#)  
 Duba, [186](#)  
 Dubai, [108](#), [155](#)  
 Dubai and Oman, [89](#)  
 Duce, James Terry, [143](#), [177](#)  
 Al Dughither, Sahar A., [165](#), [165](#)  
 Dukhan, [23](#)  
 Dunbar, G. C., [192](#), [192](#)  
 Dust Rag, The, [158](#)  
 Al-Duwaihi, 'Abd Al-Rahman, [151](#), [157](#)

## E

Earth's interior, [172](#)  
 East Africa, [116](#), [119](#), [120](#)  
 Easter Egg Row (Gazelle Circle), [127](#)  
 Eastern and General Syndicate, [4](#), [14](#), [16](#), [17](#), [26](#), [27](#), [28](#), [35](#), [42](#), [43](#), [46](#), [47](#), [47](#), [48](#)  
 Eastern Gulf Oil Co., [26](#), [47](#), [47](#)  
 Eastern Province, [6](#), [10](#), [11](#), [13](#), [14](#), [18](#), [20](#), [29](#), [33](#), [48](#), [52](#), [54](#), [58](#), [60](#), [61](#), [77](#), [105](#), [106](#), [112](#), [156](#), [165](#). *See also* Al-Hasa  
   oil and gas fields of, [175](#)  
   stratigraphy of, [173](#)  
 East Texas (USA), [23](#)  
 East-West Crude Oil and NGL Pipeline, [56–57](#), [57](#), [66](#), [66](#), [90](#), [90](#), [91](#), [102](#)  
   downstream operations, [185](#)  
 Echezuria, Patti, [106](#), [106](#)  
 Echezuria, Ralph, [48](#)  
 Economic Diplomacy: Embargo Leverage and World Politics (Daoudi and Dajani), [42](#)  
 economic downturn, [13](#), [24](#), [29](#), [35](#), [36](#), [37](#), [37](#), [40](#), [41](#), [44](#), [52](#), [54–55](#), [89](#), [138](#)  
   war years (World War II), [120](#)  
 Eddy, William A. (Colonel), [94](#), [94](#), [127](#)  
 Edh Duraiya, [73](#)  
 Al-Edrisi, Samia, [59](#), [59](#), [75](#)  
 Education and Arab Training, [176](#)  
 education and training, [10–14](#), [39](#), [128](#), [128](#), [147](#), [155](#), [156](#), [168](#), [168–170](#), [171](#), [171](#), [172–179](#), [184](#), [190](#), [190](#), [192](#), [192](#), [193](#), [211–213](#), [212](#), [213](#), [46](#), [47](#), [47](#), [51](#), [59](#), [59](#), [63](#), [63](#), [64](#), [70](#), [72–73](#), [75](#), [75](#), [110](#), [110](#), [111](#), [111](#), [113](#), [135](#), [135](#), [151](#), [151–152](#), [152](#), [163–166](#). *See also* girls' education; scholarships; *specific schools and universities*.  
 Egypt, [36](#), [39](#), [193](#), [203](#), [204](#), [20](#), [22](#), [42](#), [43](#), [44](#), [137](#)  
   war years (World War II), [97](#), [116](#)  
 'Eid, Khalifah, [172](#)  
 Eisenhower, Dwight D. (U.S. President), [204](#)  
 Eisler, Bill, [100](#)  
 e-Learning courses, [136](#)  
 electrical power, [29](#), [54](#), [58](#), [60–62](#)  
 electricity experiments, [192](#), [192](#)  
 Electric Power Unit, [35](#)  
 Elf Aquitane, [125](#)  
*Eli Knudsen* (tanker), [204](#)  
 Eltiste, William, [30](#), [30](#), [76](#), [100](#), [181](#), [182](#)  
 embargoes ("oil weapon"), [22–23](#), [29](#), [40](#), [42](#), [43](#), [43–44](#), [45](#), [80](#), [88](#)  
 Empire drill, [41](#), [41](#)  
 employee identification badges, [80](#)  
 Employee Relations, [33](#), [46](#)  
 Empty Quarter, [7](#). *See also* Rub' al-Khali  
 energy independence, [160](#)  
 energy interdependence, [160–162](#)  
 Enezi, Mousa S., [139](#), [139](#)  
 Engineering and Mechanical Services, [186](#)  
 Engineering and Operation Services, [112](#)  
 Engineering Services, [35](#), [163](#)  
 English, Walter, [68](#)

ENI, [141](#), [147](#)  
 EniRepSa Gas Limited, [141](#)  
 En Nala (al-Na'lah), [72](#), [73](#)  
 En Nala hypothesis, [144–146](#), [145](#). *See also* Ghawar  
 entrepreneurial Saudis, [107](#), [147](#), [147](#), [149](#), [149](#), [155](#), [181](#), [181](#), [182](#), [182](#), [183](#), [183](#), [184](#), [50](#), [50–51](#), [51](#), [53](#), [125](#), [147](#), [163](#)  
 environment, caring for the, [157–159](#)  
 Eocene Period, [75](#), [75](#), [81](#), [103](#), [106](#)  
 ERC (extreme reservoir contact) wells, [145](#), [145](#), [181](#)  
 Eritrea, [116](#), [119](#), [120](#)  
 Erspamer, Mike, [105](#), [106](#)  
*El Segundo* (tanker), [69](#)  
 Es Safa, [70](#)  
 Esso Libya, [42](#)  
 ethane, [190](#), [192](#), [199](#)  
 ethylene, [163](#), [192](#), [193](#), [193](#)  
 Euramerica supercontinent, [172](#)  
 Europe, [126](#), [127](#), [130](#), [130](#), [131](#), [193](#), [107](#), [161](#)  
 Event Solution Center, [77](#)  
 executive positions of Saudis, [48](#)  
 expatriate workforce, [156](#), [157](#), [157](#), [160](#), [164](#), [164](#), [165](#), [165](#), [168](#), [169](#), [169](#), [171](#), [15](#), [15–16](#), [48](#), [52](#), [52](#), [64](#), [77](#), [78](#), [79](#), [79](#), [81](#), [101](#), [128](#), **202–203**.  
   *See also* workforce  
 EXPEC (Exploration and Petroleum Engineering Center), [69](#), [69](#), [74](#), [74](#), [75](#), [76](#), [76](#), [77](#), [115](#), [115](#), [170](#), [170](#)  
 EXPEC-ARC (Exploration and Petroleum Engineering Center-Advanced Research Center), [116](#), [117](#), [145](#), [145–146](#), [180](#)  
 Exploration, [150](#), [156](#)  
 exploration, [16–19](#), [68](#), [68](#), [95–96](#)  
   upstream operations, [176](#)  
 Exploration and Petroleum Engineering Center (EXPEC), [69](#), [69](#), [74](#), [74](#), [75](#), [76](#), [76](#), [77](#), [115](#), [115](#), [170](#), [170](#)  
 Exploration and Petroleum Engineering Center-Advanced Research Center (EXPEC-ARC), [116](#), [117](#), [145](#), [145–146](#), [180](#)  
 Exploration & Producing (E&P), [114](#), [119](#), [144](#), [159](#)  
 Exploration & Producing Management Forum, [151](#), [157](#)  
 exploration support caravan, [188](#), [188](#)  
 Exploration Technical Services, [156](#)  
 extreme reservoir contact (ERC) wells, [145](#), [145](#), [181](#)  
 Exxon. *See* Standard Oil of New Jersey  
 ExxonMobil, [153](#), [188](#)  
*Exxon Valdez* (tanker), [106](#)

## F

*F. A. Davies* (storage vessel), [36](#), [36](#)  
 Fadhilli, [147](#)  
 Fairchild [71](#), [68–69](#), [69](#), [70](#), [70–71](#)  
 Al-Faisal, 'Abd Allah, [47](#), [47](#)  
 Al-Faleh, Saleh, [11](#), [11](#)  
 Al-Falih, 'Abd Al-'Aziz, [47](#), [47](#)  
 Al-Falih, Abdulaziz D., [14](#)  
 Al-Falih, Khalid A., [14](#), [81](#), [92](#), [109](#), [110](#), [133](#), [141](#), [153](#), [160](#), [161](#), [161](#), [204](#), [205](#)  
 family members at oil camps, [83](#), [83](#), [108](#), [163](#), [164](#), [164](#), [165](#), [165](#), [171](#)  
 Faraj, Ibrahim, [174](#), [174](#)  
 Farasan Islands, [16](#), [79](#)  
 Far East, [153](#)  
 farming, [36](#), [36](#), [137](#), [137](#), [50](#), [50](#), [51](#)  
 Farouq (King of Egypt), [136](#)  
 fast track program, [71–72](#)  
 Father of Petroleum. *See* Holmes, Frank "Abu al-Naft, Father of Petroleum"  
   (Major)  
 fault traps, [174](#), [174](#)  
 feeding the nation, [112](#)  
 feedstocks, [183](#), [192](#)  
 Feeney, John, [49](#), [49](#)  
 "field allotments," [80](#)  
 field parties, [67](#), [67](#)  
 50/50 profit sharing, [199](#), [200](#), [207](#), [210](#), [4](#)  
 "50-in-5" plan, [176](#), [178](#)  
 Filipinos, [78](#)  
 Finance and Government Affairs, [111](#)

Finance and Treasury, 78  
 financial speculation and oil prices, 160  
 fin-fan coolers, 93, 93  
 firefighting training, 142, 142  
 fires  
   Abqaiq, 63, 64, 64  
   Dammam Well No. 12, 98, 98–100  
   Ju'aymah, 91–92  
 “fire temple,” 18–19  
 First Five-Year Development Plan, 49  
 Fish, Bert, 98, 127  
 fishing, 12, 13  
 fixed drilling platforms, 124, 124  
 Flackmeier, Harry, 136  
 flaring natural gas, 6, 29, 49, 89, 89  
 “floating hotels,” 53  
 Flood, Bill and “Dotty,” 164  
 fluid hydroformer, 8, 8–9  
*Fly-Carrier of Disease, The* (film), 170  
 Flying Camel (airplane), 166, 166–167  
 Foraminifera, 176, 176  
 Forbes, 183  
 foreign capital resources needed, 35, 43, 52  
 foreign correspondents, 86, 86  
 foreign trade, 193–194  
 fossils, 70–71, 170, 170, 176–177  
 Fouad, ‘Abd Allah, 107, 181, 181, 182, 183  
 Fourier Transform Mass Spectrometer, 139, 139  
 fractionation, refining process, 183, 184, 187, 190, 199, 199  
 Framarzi, Abdul Rahim, 47, 47  
 France, 5, 6, 8, 21, 204, 104, 141  
   upstream operations, 182  
 Fraser, William, 39  
 free gas (non-associated gas), 86–88, 138, 156, 183, 199, 199  
 “frog” missiles, 105  
 FRPC (Fujian Refining and Petrochemical Co. Ltd.), 153  
 fuel from turpentine, 17  
 Fugate, Frank, 34  
 Fujian Province, 156, 156, 157  
 Fujian Refining and Petrochemical Co. Ltd. (FRPC), 153  
 Fuller, Elmo, 129  
 Furman, Steve, 113, 115, 115, 169  
*furush*, 76, 77, 77  
 future, managing for the, 118, 118

## G

*Gambusia* fish, 180  
 gas. See Master Gas System (MGS); natural gas  
 gas fractionation, downstream operations, 190  
 gas from coal, 17  
 gas injection plant (model), 24, 24  
 gas-oil separation plants (GOSPs), 143, 143, 186, 186, 200, 200,  
   16, 31, 32, 32, 36, 58, 58, 82, 86, 86, 89, 102, 125, 144  
   operations data, 198, 198, 199, 199  
   upstream operations, 182, 182, 183, 183  
 gasoline-blending discharge valve, 198, 198  
 “gasoline famine,” 135  
 gasoline rationing, 114, 114, 126  
 Gas Operations, 63, 141, 182  
 Gaza, 69  
*Flying Gazelle* (airplane), 166  
 Gazelle Circle (Easter Egg Row), 127  
 Gazzaz, Hasan, 7, 7  
 General Agreement of Participation, 41, 42, 45  
 “general” category, 159, 165, 194  
 General Petroleum and Minerals Organization (Petromin), 7, 52, 58, 90, 108  
 geological reconnaissance maps, 66  
 Geological Technical Services Division, 117  
 geological timeline of Saudi Arabia, 172  
 geologic fault in Saudi Arabia, 60, 60  
 geologists, 68, 68, 112, 112

geophones, 112  
 Geophysical Research & Development, 145  
 geopolitical climate, 191, 193, 196  
 geosteering, 144, 145  
 Geosteering Operations Center (GOC), 181, 181  
 Germany, 5, 20, 21, 40, 96, 97, 99, 104, 111, 112, 116, 104  
   upstream operations, 182  
 Gerrha, 9  
 Gester, G. Clark, 29, 68, 89  
 Getty, J. Paul, 201, 201  
 Getty Oil Co., 197, 198, 201  
 Al-Ghamdi, Nasser, 117, 117  
 Ghanim, Salah A. W., 47, 47  
 Ghawar, 13, 72, 73, 103, 103–105, 106, 145–147, 22, 22, 49, 87,  
   102, 116, 125, 140, 144, 145  
 Ghinah, 113  
 Al-Ghosal, Huda M., 77, 158, 158  
 Ghouth, Bader (Captain), 108, 108  
 Ghuraymil (Jebel), 71, 81  
 ghutra (headdress), 91, 91, 102, 197, 197  
 giant pumps, 36  
 girls’ education, 175, 177, 10–12, 12, 13, 13, 59, 59, 75, 75, 151, 151–152, 152  
   war years (World War II), 111, 111  
 Global Positioning System (GPS), 121  
 global reach, 107, 153, 155, 159–160  
 GOC (Geosteering Operations Center), 181, 181  
 Goerner, Hugh H., 64, 205  
 Golden Corridor, 72, 72, 74  
 gold payments, 46, 50, 52, 54, 55, 57, 57, 61, 195  
 golf in Dhahran, 109, 109  
 Gondwana supercontinent, 172  
 Al-Gosaibi family, 62, 63  
 GOSPs. See gas-oil separation plants  
 Government Affairs, 207, 3, 59, 72, 91, 207  
 Government Relations, 77, 94, 127, 143, 146, 148–149, 151, 151, 162,  
   163, 165, 172, 191, 7  
 GPS (Global Positioning System), 121  
 grades of crude oil, 152, 162  
 Graham Associates (Roy and Ray), 170  
 Grand Hotel, Jiddah, 49, 51, 51  
 Granville, Maurice, 42  
 Great Britain, 5, 21, 206. See also British government  
 Great Depression, 13, 24, 29, 40, 44, 52, 54–55, 89, 120  
 Greece, 108  
 “greening of Aramco,” 48  
 Grobba, Fritz, 97, 99, 99  
 Group of 23, 39  
 Grumm, Watson, 102  
 Guangdong Province, 153  
 guides (Bedouin), 67, 67, 71, 85, 85, 86, 87, 102, 116, 121, 121, 137, 160  
 Gulbenkian, Calouste “Mr. Five Percent,” 21, 23, 130  
 Gulf Cooperation Council, 157  
 Gulf of Aqaba, 97  
 Gulf of Mexico, 79, 80, 162  
 Gulf Oil Corp., 22, 26, 27, 28, 50, 30, 45  
 Gulf War, 101–103, 104, 105, 118  
 Al-Gusaibi, Ahmad, 148  
*gutcht* (gypsum), 76

## H

Habboubi, Hanaa H., 139, 139  
 Habib, Nabeel S., 145, 145  
 Hadeed, 88, 88  
 Haenggi, Walter, 73, 73, 76  
 Hafiz, ‘Ali, 206, 206  
 Hagerstown, Maryland (USA), 68–69  
 Hagia Sophia, 40  
 Hague, The, 193, 193, 35, 36, 153  
 Haifa, 50  
 Hajj pilgrims, 35, 39, 43, 43, 44, 44–45  
 Al-Hajri, Quriyan M., 121, 121

Half Moon Bay, 54, 54  
 Hamilton, Airy, 48  
 Hamilton, Lloyd N., 34, 34, 42, 48, 49, 50, 52, 54, 55, 56, 56, 68, 81, 95  
 Hamilton House, 100  
 Hammadi, Sa’doun, 39  
 Hamzah, Fuad, 50  
 Haradh, xii, 102, 103, 104, 136, 144, 145, 145, 146, 82, 87, 138, 138,  
   140, 140, 141, 144, 145, 150, 156  
   operations data, 199, 199  
   “hardship pay,” 169  
 hardships, joy, and laughter, 13–14  
 Hardy, Norman “Cy,” 142, 204, 205  
 Harmaliyah, 82, 102  
 Harr, 16  
 Harriss, Jerry, 67, 67, 84, 84, 105  
 Harsusi, 133  
 Hart, Parker T., 125, 127, 127, 129  
 Haruri, 121, 121  
 Harvard (USA), 180, 7  
 al-Hasa, 3, 4, 5, 5, 6, 7, 8–13, 14, 17, 39, 41–42, 46, 49, 50, 54, 61, 64, 75, 75,  
   79, 85, 89, 111, 116, 148, 174, 195, 51, 125, 127. See also Eastern Province  
   Al-Hasawi, Hasan, 132, 132  
 Hasan, Muhammad, 11, 11  
 Hassan, Fawaz, 146, 147, 147  
 Hattab, Jamil “Baba,” 177, 177  
 Al-Hauwaj, Ali, 156, 157  
 Hawiyah, 146, 82, 87, 128, 128, 132, 132, 137, 137, 138, 140–141, 150, 161, 161  
   operations data, 199, 199  
 Hawkins, Monte, 100  
 Hawley, H. J., 41, 42, 46  
 Hawtah, 87, 113  
 Hayes, Joseph, 117, 117  
 Hazmiyah, 113  
 Al-Hazza, Eiman A., 151, 151  
 health care, 39, 155, 179, 179–180, 184, 51, 165  
 “health of the company” report, 112  
 heavy crude oil, 39, 40, 152, 153  
 Heim, Arnold, 17, 17  
 helicopters used in exploration work, 18  
 Henry, Annette and Mitzi, 83, 83  
 Henry, Bob, 149  
 Henry, Schuyler B. “Krug,” 24, 24, 61, 62, 62, 63, 63, 64, 64, 66, 68, 70, 81, 83  
 hexane, 190, 192  
 high school students, developing, 71–72, 111, 111  
*hijar*, 14  
 Hijaz, 6, 8, 36, 39, 40, 40, 43, 43, 71, 137  
 Hijaz Mountains, 58, 90, 90  
 Hills, Liston F., 24, 204, 205  
 Hilyard, Lester, 82, 82, 84  
 Hinna, 66, 68  
 Hinnawi, Sami (Colonel), 191, 193  
 Hoag, Walter, 84, 84  
 Hobby Farm, 168  
 Hodgeson, W., 21, 21  
 Hofuf, 5, 5, 6, 8, 9, 10, 10–11, 39, 62, 63, 73, 106, 113, 136, 170, 7  
 Al-Hokail, Abdulaziz M., 70, 82, 111  
 Holditch, Stephen, 146  
 Holmes, Frank “Abu al-Naft, Father of Petroleum” (Major) 4, 4, 9, 14, 15,  
   16, 17, 24, 26, 30, 30, 35, 42, 43, 48, 50, 50  
 Home Ownership Program, 165, 168, 168, 185, 3, 14, 14, 51. See also housing  
 home schooling, 83, 111, 111, 10, 12  
 Hong Kong, 153  
 Hoover, Herbert (U.S. President), 55  
 Hoover, J. W. “Soak,” 62, 63, 63, 64, 64, 66, 68, 70, 71, 105  
   horizontal drilling, 74, 113–114, 115, 119, 125, 180  
 Hosmer, Jack G., 113  
 Houg, Carol DuPriest, 160, 161  
 House of Rashid, 7  
 House of Sa’ud, 7  
 housing, 73, 76, 89, 89, 162, 162–163, 163, 165, 168, 168, 171, 184, 194,  
   194, 52, 52, 53, 54, 54, 77–78, 78, 81. See also Home Ownership Program

Al-Humaid, Ahmed S., 72, 72  
 Human Resources and Training, 111  
*Hundred Men, The* (McConnell), 86, 108  
 “hundred men, the” (reduction in workers), 108–111, 115  
 hurricanes Katrina and Rita, 143, 154  
 Husain (soldier), 67, 67  
 Hussein, Hashim, 75, 75  
 Al-Husseini, Haitham, 13  
 Al-Husseini, Hassan, 13  
 Al-Husseini, Ibrahim (Colonel), 13  
 Al-Husseini, Ihsan, 13  
 Al-Husseini, Moujahed, 13  
 Al-Husseini, Najat, 13, 13  
 Al-Husseini, Sadad, 13, 14, 82, 88, 111, 114–115, 119, 119  
 Al-Husseini, Saif, 172  
 Al-Husseini, Zafer H., 21, 21  
 Al-Huzaim, Hilal Y., 8, 8  
 hydrocarbon reservoirs, 76, 112, 113, 117, 118, 177, 177  
 hydrocarbons, 166, 170, 171, 171, 187  
 hydrocracking, refining process, 188  
 hydrogen sulfide, 183, 199  
 hydroskimming plant, 189  
 hydrotreaters, 158

## I

ibn ‘Adwan, Shaykh ‘Abd Allah, 185  
 ibn ‘Aqil, Sa’d, 186, 186  
 ibn Ahmad, ‘Id, 198, 198  
 ibn ‘Ali, Sharif Husain, 6, 8  
 ibn Fahad, Ahmad, 143, 143  
 ibn Hamaid, Shaykh Rashid, 206, 206  
 ibn Hasan, ‘Abd Allah, 200, 200  
 ibn ‘Isa Al Khalifah, Shaykh Hamad, 26  
 ibn Jiluwi, Amir Sa’ud, 148, 176, 176  
 ibn Muhammad, Ja’far, 113  
 ibn Nahir, Khalifah, 203, 203  
 ibn Rimthan, Khamis (guide), 67, 67, 71, 85, 85, 86, 87, 116, 137, 160, 121  
 ibn Sa’id, Ahmad, 186, 186  
 ibn Salman, ‘Abd al-‘Aziz, 104  
*Ibn Sa’oud of Arabia* (Rihani), 12  
 ibn Saqr, Shaykh Sultan, 206, 206  
 Ibn Sa’ud, 3n. See also Al Sa’ud, ‘Abd al-‘Aziz ibn ‘Abd al-Rahman (King)  
 ibn Sulayman, Muhammad, 67, 67  
 ibn Yousuf, Ya’qoub, 186, 186  
 Ibrahim (driver), 67, 67  
 Ibrahim, Yousuf, 174, 174  
 Idea Management System (Web-based), 137  
 Idrisi dynasty, 79  
 IEA (International Energy Agency), 134  
 igneous rocks, 75  
 Imam Muhammad ibn Sa’ud University, Riyadh, 173  
 Imperial Geological Survey of Japan, 97  
 incubators, 113, 137  
 Independent Natural Gas Association of America, 42  
 Independent Project Analysis (IPA), 138  
 India, 36, 116, 142, 193, 203, 134, 157, 160  
 Industrial Center, 135, 135  
 Industrial Development Division (IDD), 181, 182  
 Industrial Relations, 33, 70, 77, 152, 159  
 Industrial Services, 128  
 Industrial Training Centers, 174, 8, 10, 10, 34  
 inflation, 112, 116  
 information network of King ‘Abd al-‘Aziz, 36–37, 39  
 infrastructure, 142, 142, 155, 181, 165  
 Institut Français du Pétrole, 164  
 intelligent field concept, 144, 181  
 “intermediate” category, 159, 159, 165, 194  
 International Energy Agency (IEA), 134  
 International Inventors Conference in Geneva (2006), 89  
 International Maritime Organization, 155  
 international oil companies (IOCs), 159–160

international operations map, 196  
 international presence, 107, 153, 155, 159–160  
 International Students Award, 72  
 IOCs (international oil companies), 159–160  
 IPA (Independent Project Analysis), 138  
 IPC. *See* Iraq Petroleum Co.  
 Iran, 16, 18, 18, 20, 23, 26, 163, 4, 4, 5, 39, 40, 43, 70, 87  
 Iraq, 6, 8, 8, 14, 16, 21, 23, 26, 35, 36, 41, 85, 97, 108, 116, 163, 196, 4, 5, 39, 41, 43, 70, 87, 101, 102, 103, 104, 104, 105, 143  
 Iraq Petroleum Co. (IPC), 23, 26, 28, 64, 47, 47, 48, 49, 50, 52, 54, 55, 71, 79, 96, 129, 130, 197, 204, 205, 5, 41  
 Ishaq, Muhammad, 160  
*Island of Allah* (film), 170, 170  
 Israel, 131, 196, 204, 31  
 Israeli-Arab tensions, 20, 22, 29, 42–43  
 Istanbul, Turkey, 40  
 Italian workers, 116, 119, 119, 120, 120, 127, 158, 159, 160, 161–162, 10. *See also* workforce  
 Italy, 106, 106, 107, 107, 108, 109, 141, 153, 155, 155  
 Ithmaniya. *See* ‘Uthmaniyah

**J**

J. Clarence Karcher Award, 145  
 Jabal Dukhan, 23, 29, 31, 48, 48  
*jabals* (modest hills), 30, 31, 42, 42, 66, 66, 83, 103, 108, 159, 159  
 Jabal School for Boys (Arab Preparatory School, Arab Trade Preparatory School), 113, 138, 153, 155, 156, 156, 168, 168, 172–173, 175, 177  
 Jaber, Shaykh Ahmad bin, 50, 50  
 Jabrin, 70  
 Jackson, Henry M., 44  
 Jaizan, 79, 186  
 Jalali, Mustafa A., 158, 158  
 Jamil, ‘Ali Bay, 185  
 Jana, 16  
 Janson, E. W., 48  
 Japan, 13, 97–98, 112, 125, 126, 193, 36, 40, 40, 52, 83, 104, 108, 153, 157, 158, 162, 163, 189, 192  
 Al-Jasir, Shaykh Hamad, 172  
 Jassim, Hijji bin, 110, 111  
 Javits, Jacob K., 44  
 Jawf, 140  
 Jazan region, 153, 189  
 Jebel Ghuraymil, 81  
 Jersey. *See* Standard Oil of New Jersey  
 Jiddah, 8, 28, 28, 34, 35, 37, 39, 43, 44, 46, 48, 49, 50, 50, 51, 51, 53, 54, 55, 56, 61, 64, 77, 81, 90, 95, 96, 97, 97, 99, 127, 148, 173, 196, 198, 201, 207, 211, 65, 65, 108, 111, 163  
 downstream operations, 185, 186, 188, 189  
 Al-Jihian, Muhammad, 64, 64  
*jinn* (genies), 85  
 Al-Jishi, ‘Abd Allah Jasim, 154, 154  
 Job Skills Training, 176  
 joint ventures, 89, 95, 96, 107, 108, 109, 111, 124, 124, 141, 153, 156, 157, 162, 163  
 downstream operations, 188, 189, 189, 192, 193  
 operations data, 198  
 Jones, Patsy, 83  
 Jordan (Transjordan), 6, 8, 8, 79, 131, 134, 165, 196, 20, 22, 33  
 Ju‘aymah, 53, 54, 60–61, 61, 91–92, 93, 93, 103, 120, 150, 163  
 downstream operations, 185, 186, 186, 190  
 operations data, 198, 198, 199, 199  
 Jubail, 5, 6, 8, 27, 27, 61, 62, 63, 63, 64, 64, 66, 66, 68, 69, 70, 70, 71, 72, 96, 96, 37, 54, 54, 62, 105, 105, 108, 153, 163  
 downstream operations, 188, 188–189, 189, 190  
 operations data, 199, 199  
 Jubail Industrial City, 88, 88  
 Jum‘ah, Abdallah S., 12, 111, 186, 49, 49, 62, 91–92, 111, 119, 119, 125, 125, 136, 137, 141, 161  
 company leadership, 204, 205  
 Jum‘ah, Jaber S., 72, 112, 125, 126, 135  
 Jum‘ah, Jasim, 151, 151

Jungers, Frank, 186, 3, 24, 29, 29, 37, 37, 38, 41, 42, 44, 46, 48, 54, 60, 61–62, 63, 64, 64  
 company leadership, 204, 205  
 Juraifani, Hamad A., 168, 179, 190, 190, 212, 213, 213, 82  
 Jurassic Arab Formation, 82  
 Jurassic Period, 75, 87, 172, 172, 173, 173, 176

**K**

Kaba, Fatima, 152, 152  
 K’aki, Saleh B., 158, 158  
 Al-Kathiri, Muhammed ‘Ali, 85, 85  
 al-Khamis, 10, 10–11  
 al-Kharj farming project, 137, 137  
 Al-Khatib, Muhammad, 168, 168  
 al-Khobar, 9, 12, 65, 76, 76, 77, 77, 90, 111, 127, 143, 149, 149, 158, 160, 172, 179, 181, 184, 187, 187, 194  
 Al-Khobar Electric Co., 181  
 Al-Koheji, Yousef, 80, 80  
 al-Kut, 10, 10–11  
 Karan, 16, 156, 159  
 KAUST (King Abdullah University of Science and Technology), 151, 151, 163, 164, 166, 166  
 Keith, Thomas, 81–82, 146  
 Kelberer, John J., 62, 64, 89, 92, 95, 95  
 company leadership, 204, 205  
 Kennedy, John F. (U.S. President), 19  
 Kennedy, Mollie, 169, 169  
 Kerr, Richard C. “Dick,” 63, 63, 68, 69, 70, 142  
 Keyes, Robert L., 205  
 KFUPM (King Fahd University of Petroleum and Minerals, College of Petroleum and Minerals), 173, 173, 179, 13–14, 20, 48, 72, 72, 74, 142, 157  
 Al-Khabbaz, Mohammad, 132, 132  
 Al-Khayyal, Abdulaziz F., 33, 152, 158, 158, 159  
 Al-Khayyal, Khalidah, 59  
 Al-Khazin, Jihad, 64, 64  
 Khafji, 142  
 Khamsin, Salim Abu, 74  
 Khan, ‘Ajab, 64, 148  
 Khazindar, Husain, 160  
 al-Khobar, 10, 11, 47, 51  
 Khuff formation, 39, 86, 87, 88, 140  
 Khurais, xii, 81, 82, 102, 102, 130, 130–131, 150  
 Khursaniyah, xi, 87, 146, 147, 150, 150, 199, 199  
 Khuzam Palace, 34, 34, 50  
 King, Henry C., 36, 40  
 King Abdulaziz Center for World Culture, 166  
 King Abdulaziz University in Jiddah, 173, 45, 45  
 King Abdullah University of Science and Technology (KAUST), 151, 151, 163, 164, 166, 166  
 Kingdom of Hijaz and Najd and Its Dependencies, 46  
 Kingdom of Saudi Arabia, xi, 3, 4, 7, 8, 46–48, 47, 127, 173, 186, 5, 10. *See also* Al Sa‘ud (Kings); Saudi Arabia  
 King Fahd University of Petroleum and Minerals (KFUPM, College of Petroleum and Minerals), 173, 173, 179, 13–14, 20, 48, 72, 72, 74, 142, 157  
 King Sa‘ud University (Riyadh University), 72, 77  
 Kingsbury, K. R., 26, 27, 28, 41, 48  
 Kinnear, James, 146  
 Kirkuk, 17, 22, 23, 36, 163, 41  
 knowledge-based society, building a, 163–166  
 Koch, Thomas W., 63, 63, 72, 73  
 Kombargi, Shafiq W., 199, 199  
 Korean War, 168, 199, 200, 204  
 Kreider-Reisoner, 69  
 Kristofferson, H. C., 21, 21  
 Krueger, L. P., 192, 192  
 Kuwait, 5, 7, 13, 13, 14, 16, 23, 23, 50, 96, 126, 142, 4, 5, 38, 41, 101, 102, 103, 104, 105  
 Kuwait City, 177, 43  
 Kuwait Oil Co., 47, 47, 197, 201, 45

**L**

“Labor City” (Madinat al-‘Ummal), 14  
 labor unrest, 158–162, 184–186  
 Al-Lafi, Ali A. Attiyah, 158, 158  
 LaGuardia Airport, New York (USA), 69, 69  
 landing strip, 137  
 language barrier, 151, 157, 157  
 al-Latif, Muhammad ibn ‘Abd, 67, 67  
 Latin America, 160  
 laundry workers, 80, 80  
 Lawrence, T. E. (Lawrence of Arabia), 6  
 lead content in gasoline, 157  
 leadership, company, 111, 204–205  
 leadership abilities of King ‘Abd al-‘Aziz, 3, 5, 36, 37  
 lean times, transformation, 79–81  
 Lebanon, 8, 8, 71, 131, 133, 133, 134, 157, 165, 193, 196, 33, 41  
 Leeds University (U.K.), 74  
*Legacy of a Lifetime* (Ajmi), 13  
 Lehigh University, Pennsylvania (USA), 212  
 Leiden, 153  
 Lenahan, William J. “Bill,” 64, 90, 95, 96, 96, 97–98  
 lending employees (“seconding”), 62  
 lessons learned, 125–127, 128, 137, 138  
 letters from oil company employees, 86, 86, 87, 184  
 Lewis, Leslie, 41  
 Libya, 23, 38, 41, 42  
*Life* magazine, 171  
 light crude oil, 39, 40, 42, 44, 52, 70, 89, 96, 103, 142, 144, 147, 177  
 lightering areas, 36, 196  
 Light Industrial Park, 117  
 lighting, fuel for, 17, 19  
 limestone, 75, 75, 79, 79, 81, 82, 89, 103, 177  
 liquid hydrocarbons (condensate), 157, 183  
 lithosphere, 172  
 Littlejohn, William Laney, 52, 89  
 Little League Baseball, 138, 79, 79  
 living conditions, 155, 157, 158, 159, 160, 185  
 Local Industrial Development, 46, 51  
 Logan, Sam “Mr. Sam” and Mildred, 137  
 logo, Saudi Aramco, 136, 136  
 Lombardi, Maurice E., 25–26, 26, 27, 29, 41, 42, 43, 46, 47, 48, 49, 50, 55, 63  
 London, 130, 130, 202, 35, 153  
 Long Beach, California (USA), 132, 132  
 Longrigg, Steven, 50, 50, 52, 54, 55, 79, 96  
 Loomis, Francis B., 42, 43, 46, 47, 49  
*Los Angeles Times*, *The*, 169, 106  
 Louisiana (USA), 124, 196  
 “Lucky No. 7.” *See* Well No. 7 (Dammam Dome)  
 Lukoil, 141  
 Luksar Energy Limited, 141  
 Lunde, J. P., 21, 21  
 Luqman, Muhammad, 151, 151  
 Luttrell, Robert, 36

**M**

Maby, Robert L., Jr., 157  
 MacPherson, James “Mr. Mac,” 128–129, 129, 138, 142, 149, 201  
 Madani, Mansoor, 158, 158  
 Madgwick, George, 25  
 Madinah, 6, 35  
 Madinah Gate, 44, 44, 97, 97  
 Madinat-Abqaiq, 168, 168, 171, 171  
 Madinat al-‘Ummal (“Labor City”), 14  
 Al-Maghlouth, Khalid Nassir, 72  
 magnetic resonance imaging (MRI), 116  
 Mahmud, Ahmad Muhammad, 64, 64  
 Al-Majdhub, ‘Abd Al-Mun‘im, 185  
 Majid, Said, 174, 174  
*majlises* (traditional open meeting rooms), 41, 50, 55  
 majority stake in Aramco by Saudi Arabia, 45–46  
 Al-Makhaytah, ‘Abd al-Latif ‘Abd Allah, 99, 101

Makkah, 6, 8, 28, 35, 44, 44, 46, 51, 56, 90, 138, 207, 7, 189  
 malaria, 62, 179, 180  
 Al-Malhoulq, Shaykh ‘Abd Allah, 172  
*Al-Malik Saud Al-Awal* (tanker), 205, 205  
 Management Development, 48  
 Management Services, 72  
 managers, Saudi, 21, 21  
 Al-Manasir, Farraj T., 8, 8  
 Mandaville, James P., 149, 150  
 mangrove research and restoration, 160, 160  
 Manifa, 142, 77, 82, 104, 104, 150, 157  
 Manna’, ‘Abd Allah, 64, 64  
 Manufacturing Operations, 70  
 Maracaibo, 24  
 Maracaibo, Lake, Venezuela, 23  
 Marafiq, 196, 199, 199  
 Al-Marhoun, Jamal, 132, 132  
 Marinovic, Baldo, 23, 48, 50  
 Marjan, 16, 32, 32, 36, 82, 86, 103, 113  
 Marketing and Supply Planning, 74  
 market vs. posted price of oil, 4, 5, 39, 43  
 marl pits, 120  
 Marshall Plan, 126  
 Mashour, Mazen M., 89, 89  
*mashrabiyah* (privacy screens), 51, 51  
 Masjid-i-Suleiman, Iran, 18, 18, 20, 23  
 Massachusetts Institute of Technology (MIT, USA), 145  
 Master Gas System (MGS), 37, 37, 44, 44, 52–54, 53, 54, 58, 81, 86, 88, 88, 128, 128, 133, 138, 140, 146, 162  
 downstream operations, 190, 190  
 upstream operations, 183, 183  
 Al-Matrood, ‘Abd Allah, 183  
 Matthews, Charles, 133, 149  
 Al-Mausalli, Ahmad ‘Isa, 174, 174  
 maximum reservoir contact (MRC) wells, 144, 145, 181  
 Mazalij, 82, 150  
 McConnell, Philip, 72, 86, 86, 108, 109, 112, 160, 161  
 McDonald, Harry, 149  
 McGhee, George, 200  
 McIntosh, Clarence J., 127  
 Medical Services, 77, 137, 151  
 Mediterranean Sea, 131, 132  
 Meeker, Floyd, 81  
 Mellon, Andrew, 27, 28  
 Memphis State University, Tennessee (USA), 72  
 metamorphic rocks, 75  
 methane (sales gas), 52, 183, 187, 187, 190, 199  
 Mexico, 23  
 MGS. *See* Master Gas System  
 microfossils, 176, 176  
 micropaleontologists, 177  
 Middle East Export Press, 170  
 Midrikah, 156  
 Midyan, 97, 97  
 Milan, 153, 155, 155  
 Miller, Otto N., 42  
 Miller, Robert P. “Bert,” 24, 24, 61, 62, 62, 63, 63, 64, 66, 69, 70, 71, 73, 73  
 Ministry buildings, 208–209, 209  
 Ministry of Finance, 34, 39, 49, 50, 52, 53, 55, 56, 90, 98, 101, 142, 146, 148, 162, 173, 207  
 Ministry of Higher Education, 173, 13  
 Ministry of Petroleum and Mineral Resources, 155, 156, 210, 6, 7, 10, 13, 24, 37, 71, 89, 92, 93, 95, 104, 107, 111, 125, 151, 151, 158  
 Miocene Period, 25, 41, 73  
 Mishari, Ibrahim S., 74  
*Miyah-A Story of Water* (film), 170  
 Mo‘ammar, Masha’el, 59, 59  
 Mobil (Socony Vacuum), 29. *See also* Arabian American Oil Co. (Aramco)  
 Mobil Oil Co., 183, 41, 42, 80, 80, 108, 125  
 modernization plans of Saudi Arabia, 207, 210–211, 4, 163  
 modern oil industry, 17, 19

Moffett, James A., 162  
Moffitt, Richard G., 121, 121  
Mollo, George J., Jr., 111, 111  
Moore, W. F., 138, 205  
Moose, James S., 127  
Al-Moqbil, Ahmad R., 8, 8  
Mosque of the Adenese, 78, 78  
mosquitos, fighting, 180  
“most ambitious energy project in history,” 49, 52–54, 58  
Mosul, 21  
mothballing, 82, 86, 102, 102  
Motiva Enterprises LLC, 124, 124, 153  
Motor Oil (Hellas) Corinth Refineries S.A., 107  
Al-Mousa, Bader, 155, 155  
Mousli, Na‘ilah, 75, 88, 88  
MRC (maximum reservoir contact) wells, 144, 145, 181  
MRI (magnetic resonance imaging), 116  
Mubarak, ‘Abd al-Rahman M., 9, 9  
al-Mubarraz, 99  
Al-Mughamis, Mohammad, 179  
Al-Muhareb, Ali A., 78  
Al-Muhtasib, Ibrahim, 211, 212, 212  
Muhammad, ‘Abd Allah, 159, 159  
Muller, Hendrik, 139, 139  
Mulligan, William, 148, 172, 202, 203  
multilateral drilling, 114–115, 180, 181, 181  
Multinational Corporations (U.S. Senate Subcommittee), 44  
Al-Munif, Munif, 111, 111  
Al Murrah tribe, 7  
Murraba’ Palace, 112, 112  
Murray, Wallace, 42, 43  
Al-Musaiid, Hesham, 74  
Al-Mustafa, Ameer A., 75, 75  
Mussolini, Benito, 108  
Mutawi, Hamid, 64, 64  
Al-Mutlaq, Abeer M, 151, 151  
Mutlaq (Bedouin), 113

**N**

Nagasaki, 36, 83, 83  
Al Nahyan, Shaykh Zayed ibn Sultan, 206  
Al-Naimi, Ali I., 155, 156, 172, 176, 190, 190, 212, 213, 213, 21, 46, 48, 49, 49, 64, 69, 70, 70, 71, 91, 92, 93, 95, 95, 107, 107, 108, 111, 125, 125, 133, 151, 151, 153, 162, 166  
company leadership, 204, 205  
Najd, 3, 6, 12, 14, 15, 16  
Najran, 72  
al-Na‘lah (En Nala), 72, 73  
names for Tapline pumping stations, 133, 133  
naphtha, 192  
naphthalene, 192  
naphthenes, 187  
Al-Nasr, Nadhmi A., 163  
Nasif, Shaykh Muhammad, 50  
Nasser, Amin H., 20, 144  
Nasser, Gamal Abdel (Colonel), 203–204  
National Bank of Turkey, 21, 130  
National Commission for Wildlife Protection and Development, 106  
National Council on U.S.-Arab Affairs, 72  
National Dairy and Ice Cream Plant, 183  
nationalization, 40, 41, 45  
National Laundry, 183  
national (state-owned) oil companies (NOCs), 159–160  
natural gas, 72, 72, 76, 6, 29, 39, 39, 49, 119, 138, 140–141, 147, 150, 156, 163, 175, 175. *See also* oil and gas  
operations, 199, 199  
production and processing, 182, 183  
Natural Gas Initiative (NGI), 141  
Natural Gas Liquids (NGLs), xi, 37, 37, 52–54, 53, 54, 56–57, 57, 58, 81, 109, 150, 150  
downstream operations, 184, 185, 190, 192

operations data, 199, 199  
production history, 200–201  
upstream operations, 183  
natural gasoline. *See* Natural Gas Liquids (NGLs)  
Nawwab, ‘Abd al-Hafiz, 172  
Nawwab, Ismail I., 72, 72  
Nazer, Hisham M., 89, 92, 95, 95, 102, 103, 107, 107  
company leadership, 205  
Near East College Association of Beirut, 176  
Near East Development Corporation (NEDC), 22–23, 26  
“Near East” map, 8, 8  
Nearpass, G. McLean “Mac,” 138, 172  
“net-back” contracts, 88  
Netherlands, 8, 35, 43, 104, 146, 146, 153  
Netherlands Bank, 53, 55, 57, 57  
Neutral Zones, 14  
New Business Development, 141, 162  
New Deal, 54–55  
New Horizons Idea Award, 180  
New York (USA), 78, 202, 202, 213, 153  
New York Mercantile Exchange, 160  
*New York Times, The*, 8, 98, 104, 42, 160  
New York University (USA), 7  
*New York World Telegram*, 87, 87  
New Zealand, 62, 104  
NGI (Natural Gas Initiative), 141  
NGLs. *See* Natural Gas Liquids  
Nigeria, 36  
nitrogen oxides, 124  
Nixon, Richard M. (U.S. President), 31, 43  
NOCs (national (state-owned) oil companies), 159–160  
“nominations” (projections of crude oil required), 29–30  
Nomland, Jorgen “Doc,” 29, 64, 71, 79  
non-associated gas (free gas), 86–88, 138, 156, 183, 199, 199  
Al-Noor, ‘Abd, 151, 151  
Al-Noor, Mohammad, 132, 132  
North Camp, 78  
Northern Area Manufacturing, 82  
Northern Area Operations, 82  
Northern Area Producing, 48  
North Pier, Ras Tanura, 185  
North Riyadh Bulk Plant, 127  
North Sea, 23, 79, 80, 80, 119, 134  
North Slope of Alaska, 134  
Nuayyim, 150

**O**

OAPEC (Organization of Arab Petroleum Exporting Countries), 38  
oases, 8, 9, 12. *See also* al-Hasa  
*Oasis of Al-Hasa, The* (Vidal), 149  
Oberlin College, 36, 40  
OCC (Operations Coordination Center), 91, 91, 154, 154, 184, 184  
Occidental Petroleum Co., 39, 41  
Offshore Drilling, 106  
offshore oil and gas, 124, 124, 138–139, 142, 16, 16, 17, 17, 32, 32, 34, 36, 37, 37, 52, 58, 58, 74, 80, 80, 82, 84, 84–85, 86, 86, 103, 103, 156, 157, 159, 159. *See also* Safaniya; specific facilities  
downstream operations, 186, 186  
upstream operations, 180  
Ohliger, Floyd, 76, 77, 77, 81, 97, 98, 148, 162  
oil and gas. *See also* downstream operations; natural gas; operations data;  
price of crude oil; Saudi Arabian Oil Co. (Saudi Aramco); supply and demand; upstream operations  
crude oil classifications, 39, 152, 162  
discoveries (major) 1859–1939, 23  
operations map, 197  
origins of, 74–75, 170–171  
production and processing, upstream operations, 182  
production history, 200–201  
reserves, 72, 72, 74, 22–23, 134, 143, 175, 175  
*Oil Caravan, The* (Qafilat az-Zayt), 158, 158

Oil Creek (Pennsylvania, USA), 17, 19  
oil glut, 23  
*Oil in the Arab States* (Al-‘Abbusi), 5  
oil operations, 198, 198  
oil seeps, 16, 16, 17, 18  
Oil Spill Contingency Plan, 104, 105  
oil spill in Arabian Gulf, 103–106, 104, 105  
Oil Spill Service Center, 104  
oil stabilizer plants, 160  
Oil Supply Planning and Scheduling (OSPAS), 154, 154, 184  
oil tanker loading celebration, 90, 91, 91, 95, 160  
“oil weapon.” *See* embargoes  
*Oily Bird*, 74  
Oklahoma (USA), 23, 182  
Olayan, Suliman, 147, 148, 183  
Old Town Camp, Bahrain, 31, 31  
olefins, 192, 193, 193  
Oman, 206, 112, 112  
Onassis (Aristotle) arbitration, 200–201, 203, 203  
Onsan, 107, 107  
OPEC. *See* Organization of Petroleum Exporting Countries  
“Open Door Policy,” 21  
Operations Coordination Center (OCC), 91, 91, 154, 154, 184, 184  
operations data, 194–203. *See also* downstream operations; upstream operations  
domestic operations map, 195  
gas operations, 199, 199  
international operations map, 196  
natural gas liquids (NGLs) production history, 200–201  
oil and gas operations map, 197  
oil operations, 198, 198  
oil production history, 200–201  
production history, 200–201  
workforce history, 202–203  
Operator Training Simulation (Web-based), 136  
Oregon State University (USA), 77  
Organization of Arab Petroleum Exporting Countries (OAPEC), 38  
Organization of Petroleum Exporting Countries (OPEC), 210, 4, 4, 5, 7, 38, 41, 42, 43, 45, 79–80, 88, 89, 91, 118, 125, 142  
“Origin of Oil, The” (Steineke), 74  
origins of oil and gas, 74–75, 170–171  
*Flying Oryx* (airplane), 166  
Al-Osaimi, Mohammed A., 158  
OSPAS (Oil Supply Planning and Scheduling), 154, 154, 184  
Al-Othman, Abdullatif A., 73, 136  
Ottoman Empire, 5, 6, 7, 8, 8, 9, 20, 21, 23, 36, 39, 40, 137  
*Out in the Blue* (Barger, Tim), 87  
Out-of-Kingdom Training, 72  
Owen, Bill, 41  
Owen, Garry, 146, 146  
Owen, William L., 191, 193, 7, 7  
ownership of Arabian American Oil Co. (Aramco) by Saudis, 29, 40–41, 45–46, 64, 69, 159  
ozone precursors, 124

**P**

Pacific Theater, serving the, 115–116, 118, 121, 121, 126  
Pacific Western Oil Corporation, 201  
Page, Robert C., 179, 179  
Pakistan, 10  
Pakistanis, 142  
Paleozoic Era, 172  
Palestine, 69, 131, 132, 196, 196  
Palestinians, 120, 142, 157, 199, 199, 10, 20, 31, 42  
Palmer, William, 106, 108, 148  
Palm Springs, California (USA), 40  
palynologists, 177  
Pan American Petroleum and Transport Co., 22  
Pangea, 172  
paraffins, 187  
Parallel Oil Water and Gas Reservoir Simulator (POWERS), 116, 179  
participation agreement, 40–41, 42, 45

PDPs (Professional Development Programs), 64, 72, 73  
pearling, 12, 13, 13, 26  
Pennsylvania (USA), 17, 19, 20, 20, 23, 162, 11  
pentane, 190  
people power (self-development), 135–137  
performance standards, rethinking, 137–138  
“permanent shortage” of 1970s, 135  
permeability, 177, 177  
Permian Basin, West Texas (USA), 23  
Persia, 4, 15, 18, 20, 23, 35, 36, 41  
Persian Gulf, 49, 74  
Peshawar, 64  
petrochemicals, 133, 152, 153, 156, 158, 162–163, 166  
downstream operations, 190, 192–193, 199  
upstream operations, 183  
Petrola, 108  
Petroleum Concessions Ltd., 79, 95, 96  
petroleum engineer, first woman, 75  
Petroleum Engineering and Development, 88, 102, 144  
Petroleum Technology Research Centre in Canada, 158  
petroleum traps, 170, 174, 174  
Petroline, 58  
Petromin (General Petroleum and Minerals Organization), 7, 52, 58, 90, 108  
Petron Corp., 107, 141  
Petro Rabigh, 108, 162, 162, 163, 185, 188, 192  
*Pherkad Star* (supertanker), 108, 108  
Phi Kappa Phi honor society, 72  
Philby, Harry St. John Bridger (“Abd Allah”), 17, 35, 36, 37, 43, 46–47, 49, 49, 50, 52, 54, 55, 97  
Philippines, 111, 141  
*Phoenix Star* (tanker), 83, 83  
Piazza Duomo, 155, 155  
Piercy, George, 39  
pipelines, 18, 18, 90, 98, 98,128, 143, 36, 58, 63, 90, 90, 91, 102, 120, 120, 125, 127, 150  
downstream operations, 185, 191, 195  
plane table, 70  
Planning, 72  
“Planning Guides for Aramco as a Corporation” (Barger), 3, 6, 24  
plant safety (safety procedures), 62–63  
Plants and Pipeline, 63  
plastics industry, 133, 163, 192  
plate tectonics, 172  
PMI (Project Management Institute), 126, 138, 140  
*PM Network*, 77  
“point of transformation,” 144–146  
polymers, 192  
polystyrene, 192  
porosity, 177, 177  
portable housing, 89, 89, 162, 162, 194, 194  
Port Arthur, Texas (USA), 95, 124  
posted vs. market price of oil, 4, 5, 39, 43  
power grid (electrical), 58, 60–62  
power plants built, 73, 142  
POWERS (Parallel Oil Water and Gas Reservoir Simulator), 116, 179  
Powers, R. W. “Brock,” 4, 18, 20, 29–30, 61, 64  
company leadership, 205  
Precambrian Era, 75, 172  
Preferential Area of Standard Oil Co. of California, 47, 47  
Presidency of Meteorology and Environmental Protection, 106  
president of Aramco, first Saudi, 21, 69, 70, 70  
pressure vessels, 147  
Price, Ed, 88  
price of crude oil  
“basket” of prices, 89  
dramatic swings in, 101  
falling, 19, 24, 138, 5, 80, 82, 113, 118, 126, 134, 142  
gyrations of, 4  
posted vs. market price, 4, 5, 39, 43  
quota strategy, 79, 80, 88–89, 91

rising, [53](#), [55](#), [126](#), [32](#), [39](#), [40](#), [42](#), [44](#), [49](#), [70](#), [80](#), [86](#), [102](#), [125](#), [135](#), [142](#), [152](#), [160](#), [161](#)

Sidon price claims, [7](#), [10](#), [19](#)

private sector vs. Aramco, [81–82](#)

Producing and Water Injection, [48](#), [49](#)

product carriers, [155](#), [191](#)

production history, [200–201](#)

production increase for wartime effort, [102–103](#)

Products Distribution, [21](#)

Professional Development Programs (PDPs), [64](#), [72](#), [73](#)

profit sharing, [197–200](#), [207](#), [210](#), [4](#)

projections of crude oil required (“nominations”), [29–30](#)

project management, centralized, [35](#), [35](#)

Project Management IBM, [34](#), [34](#)

Project Management Institute (PMI), [126](#), [138](#), [140](#)

Project of the Year Awards, [138](#), [140](#)

project planning and execution process, [125–127](#), [128](#), [137](#), [138](#)

Project Support and Controls, [77](#)

promotion of Saudis, [46](#), [48](#)

propane, [187](#), [187](#), [190](#), [192](#). See *also* Natural Gas Liquids (NGLs)

propylene, [163](#), [192](#), [193](#), [193](#)

prospects, identifying, [170](#)

“Prosperity Well.” See Well No. 7 (Dammam Dome)

Public Affairs, [172](#), [72](#), [75](#), [77](#)

Public Relations, [172](#), [21](#), [46](#), [49](#), [62](#)

pumping units, [137](#)

pump stations (Tapline), [133](#), [133](#), [134](#), [135](#)

pygas, [193](#), [193](#)

Pyxis compass, [83](#)

## Q

*Al-Qafilah al-Usubu'iyah (Weekly Caravan, The)*, [158](#)

Qafilat az-Zayt (Oil Caravan, The), [158](#), [158](#)

Al-Qahtani, Abdullah M., [145](#), [145](#)

Al-Qahtani, Ayed, [111](#)

Qaisumah, [85](#), [132](#), [134](#), [143](#)

al-Qasim, [82](#), [125](#), [127](#)

Al-Qasim, Ziyad, [134](#), [134](#)

Qasim, [52](#)

Qatar, [7](#), [23](#), [49](#), [102](#), [206](#), [41](#)

Qatif, [5](#), [6](#), [6](#), [8](#), [9](#), [12](#), [54](#), [54](#), [62](#), [73](#), [143](#), [87](#), [142](#), [143](#), [143](#), [144](#), [144](#)

  downstream operations, [190](#)

Qatif Treaty, [6](#)

Al-Qudaihi, Jasim ibn Muhammad, [154](#), [154](#)

*Queen Mary* (barge), [124](#), [124](#)

quick response, [91–92](#)

quota strategy, [79](#), [80](#), [88–89](#), [91](#)

Qurain, [73](#)

Quran, [173](#), [20](#)

Qurayyah Seawater Treatment Plant, [35](#), [35](#), [52](#), [55](#), [55](#), [58](#), [82](#), [102](#), [152](#)

Qurishi, Ahmed Abdullah, [68](#)

## R

Rabil, Annette, [83](#)

Radhi, Ahmad, [203](#), [203](#)

Radiology Group, [137](#)

Radio Makkah, [10](#)

radio shack and towers, [107](#), [142](#), [142](#)

Rafha, [134](#)

Rafie, M. Yusof, [102](#), [141](#)

Al-Rahman, ‘Abd, [5](#)

Rahimah, [11](#), [15](#), [15](#)

railroads, [136–137](#), [137](#), [140](#)

rainfall. See water importance

Ras al-Mish'ab, [132–133](#), [135](#), [135](#)

Al Rashid, [6](#)

Al-Rashid, Rashid, [190](#), [190](#)

Ras Safania, [70](#)

Ras Tanura, [39](#), [41](#), [89](#), [89](#), [90](#), [98](#), [98](#), [107](#), [111](#), [115](#), [116](#), [117](#), [117](#), [120](#), [121](#), [121](#), [125](#), [128](#), [128](#), [129](#), [129](#), [131](#), [132](#), [142](#), [143](#), [158](#), [159](#), [160](#), [162](#), [163](#), [163](#), [164](#), [164](#), [165](#), [165](#), [168](#), [169](#), [169](#), [171](#),

[172](#), [174](#), [178](#), [180](#), [182](#), [195](#), [195](#), [198](#), [198](#), [201](#), [4](#), [8](#), [8–9](#), [10](#), [15](#), [16](#), [26](#), [31](#), [31](#), [36](#), [48](#), [52](#), [54](#), [77–78](#), [91](#), [95](#), [95](#), [105](#), [120](#), [125](#), [125](#)

  downstream operations, [185](#), [188](#), [189](#), [190](#)

  operations data, [198](#), [198](#), [199](#), [199](#)

  upgrade, [125–126](#), [127](#), [137](#), [138](#)

Rathbone, Monroe, [5](#)

recovered oil from oil spill, [105](#), [106](#)

Al-Redaini, Saleh, [58](#)

Red Crescent, [191](#), [204](#)

Red Line Agreement, [20](#), [21–24](#), [26](#), [129–130](#)

Red Sea, [75](#), [79](#), [96](#), [131](#), [33](#), [54](#), [57](#), [58](#), [97](#), [97](#), [109](#), [163](#), [172](#), [182](#), [185](#), [191](#)

Red Sea Refining Co., [189](#)

refined liquid petroleum gasses (RLPG), [185](#)

refineries, [78](#), [108](#), [107](#), [107](#), [108–109](#), [118](#), [124](#), [133](#), [152–153](#), [158](#), [160](#).

*See also* Ras Tanura; *specific refineries*

  downstream operations, [187–189](#)

  Refining, Marketing & International, [107](#), [152](#), [156](#)

regenerator, [162](#), [162](#)

relinquishments of non-oil producing portions, [18](#), [68](#)

remarkable relationship, [84–85](#), [87](#)

Rentz, George, [133](#), [148](#), [148](#), [149](#)

*Report of Operations (Aramco)*, [170](#)

Repsol YPF, [141](#)

Republic of Korea, [107](#), [107](#), [108](#), [134](#), [134](#), [153](#), [155](#), [157](#), [162](#)

  downstream operations, [189](#)

resbots (reservoir nano-agents), [180](#)

Research and Development (R&D) Center, [139](#), [139](#)

Research Institute of Innovative Technology for the Earth, [158](#)

reserves of oil and gas, [72](#), [72](#), [74](#), [22–23](#), [134](#), [143](#), [175](#), [175](#)

reservoir

  characterization, [179](#)

  management, [77](#), [114–118](#)

  pressure, [49](#), [54](#), [55](#), [55](#), [180](#)

  simulation, [115](#), [115–116](#), [116](#)

Reservoir Characterization, [117](#), [145](#)

Reservoir Description and Simulation, [77](#)

Reservoir Engineering, [75](#), [88](#)

Reservoir Management, [115](#), [118](#), [118](#), [160](#)

reservoir nano-agents (resbots), [180](#)

Reynolds, George, [18](#)

Rhoades, Ralph “Dusty,” [26](#), [28](#)

Richards, Don E., [185](#)

Richmond Exploration Co., [142](#)

Al-Ridhwan, ‘Abd Al-‘Aziz, [136](#), [136](#)

Rider University, New Jersey (USA), [179](#)

Rihani, Ameen, [3](#), [4](#), [12](#), [12](#), [14](#), [15](#)

*rijm* (pile of rocks), [71](#)

ripple effect, [183](#), [80](#)

Riverhead, New York (USA), [151](#), [157](#), [174](#)

Riyadh, [3](#), [4](#), [5](#), [7](#), [9](#), [9](#), [32](#), [38](#), [38](#), [39](#), [52](#), [79](#), [81](#), [82](#), [90](#), [97](#), [98](#), [102](#), [120](#), [136](#), [137](#), [140](#), [142](#), [142](#), [159](#), [170](#), [196](#), [207](#), [208–209](#), [209](#), [20](#), [50](#), [104](#), [108](#), [125](#), [127](#), [137](#), [158](#)

  downstream operations, [188](#), [189](#)

  Riyadh University (King Sa’ud University), [72](#), [77](#)

riyals, [195](#), [195](#), [210](#), [10](#), [10](#)

RLPG (refined liquid petroleum gasses), [185](#)

Robert College, Istanbul, [40](#)

Robert Morris Junior College in Pittsburgh (USA), [11](#), [11](#)

Rocheville, Charles, [63](#), [63](#), [69](#), [70](#)

rock, studying, [112](#)

“rock oil,” [17](#), [19](#)

“Rock Wednesday” demonstrations in Dhahran, [20–23](#)

Rodgers, William S. S., [204](#), [205](#)

Rodinia supercontinent, [172](#)

Rodstrom, Charles, [80](#)

Rolling Hills Country Club, [109](#), [109](#)

Roosevelt, Franklin Delano (U.S. President), [54–55](#), [126](#), [136](#), [137](#), [162](#)

  ‘Abd al-‘Aziz (King) and, [94](#), [94](#), [119–120](#), [127](#), [136](#), [137](#), [196](#)

  Roosevelt, Theodore (U.S. President), [42](#)

  “Roosevelt Recession,” [89](#)

rotary drillers, [101](#)

Royal Dutch-Shell Group, [19](#), [20](#), [21](#), [109](#), [141](#)

Royal Mint in Britain, [57](#)

Royal Navy (British), [18](#), [19](#), [29](#), [111](#)

Rub’ al-Khali, *xv*, *xvi*, [5](#), [7](#), [56](#), [67](#), [111](#), [197](#), [197](#), *ix*, *x–1*, [16](#), [18](#), [78](#), [39](#), [39](#), [119](#), [120](#), [120](#), [121](#), [141](#)

Rubaya’, Sulaiman, [212](#), [212](#)

Al-Rushaid Group of Saudi Arabia, [89](#)

Russia. See Soviet Union

Rutherford, M. R., [127](#)

Ruwaili, Haitham, [137](#)

Ryan, Sir Andrew (“Last of the Dragomans”), [50](#), [55](#)

## S

Al-Saadoun, Hamed T., [48](#)

Al Sabah, Shaykh Mubarak, [7](#), [7](#)

SABIC (Saudi Basic Industries Corporation), [92](#), [162](#)

Sabini, John Anthony, [149](#)

*sabkha*s (small salt flats), [76](#), [147](#), [119](#)

Sa’d, ‘Aziz A., [9](#), [9](#)

Safaniya, [124](#), [124](#), [139](#), [142](#), [16](#), [16](#), [34](#), [36](#), [37](#), [37](#), [74](#), [77](#), [82](#), [84](#), [84–85](#), [103](#), [105](#)

safety procedures for plants, [62–63](#)

Saggaf, Muhammad M., [145](#), [145](#)

Al-Saif, Abd Allah S., [119](#), [119](#), [159](#), [159](#)

sails (Vela), [83](#)

*Saiph Star* (tanker), [191](#), [191](#)

Salamah, Muhammad A., [148](#), [151](#), [151](#), [186](#), [212](#), [212](#)

Saleh, Hamzah, [111](#)

Saleri, Nansen, [118](#), [160](#)

sales gas (methane), [52](#), [183](#), [187](#), [187](#), [190](#), [199](#)

Salhah, Najib, [50](#)

Salih (cook), [67](#), [67](#)

Saline Water Conversion Corp. (SWCC), [199](#), [199](#)

Salwah, [70](#), [84](#)

Samarec (Saudi Arabian Marketing and Refining Co.), [108](#), [109](#), [110](#), [110](#), [170](#)

Samarkand (Uzbekistan), [40](#)

SAMCOM (Saudi Arab Manpower Committee), [64](#)

Sander, Nestor John, [86](#), [104](#), [105](#), [144](#), [145](#), [146](#), [147](#)

San Francisco, California (USA), [48](#), [50](#), [68](#), [71](#), [73](#), [78](#), [80](#), [81](#), [84](#), [89](#), [90](#), [105](#), [202](#)

SASC (Saudi Aramco Sino Co. Ltd.), [153](#)

SaskPower, [158](#)

SASREF (Shell in Jubail), [188–189](#), [189](#)

SATORP (Total Refining and Petroleum Co.), [188–189](#)

Satterthwait, Arnold, [174](#), [174](#)

Al Sa’ud, ‘Abd al-‘Aziz ibn ‘Abd al-Rahman (King), *xi*, [5–8](#).

*See also* Kingdom of Saudi Arabia; Saudi Arabia

  Americans as viewed by, [55](#)

  Aramcons and families reception hosted by, [160](#), [161](#), [207](#)

  CASOC facilities visited by, [88](#), [88](#)

  consolidation of territories by, [3–4](#), [5](#), [14](#), [120](#)

  death of, [174](#), [185](#)

  foreign capital resources needed and, [35](#), [43](#), [52](#)

  information network of, [36–37](#), [39](#)

  leadership abilities of, [3](#), [5](#), [36](#), [37](#)

  modernizing government by, [207](#), [210–211](#)

  negotiation talent of, [5](#)

  official coins, first, [195](#)

  oil tanker loading celebration, [90](#), [91](#), [91](#), [95](#), [160](#)

  personality of, [2](#), [3](#)

  photographs of, [2](#), [4](#), [7](#), [12](#), [91](#), [94](#), [111](#), [161](#), [201](#), [207](#)

  railroad and, [137](#)

  Riyadh recaptured by, [5](#), [7](#), [170](#), [170](#)

  Roosevelt, Franklin Delano (U.S. President) and, [94](#), [94](#), [119–120](#), [120](#), [127](#), [136](#), [137](#), [196](#)

  subjects (providing for) goal of, [3–4](#), [14](#), [37](#), [39](#), [90](#), [111](#), [120](#)

  suspicion of outside influence, [5](#), [14](#), [16](#), [35](#), [55](#), [98](#)

  vision of, [166](#)

  warrior skills of, [3](#), [5](#)

Al Sa’ud, ‘Abd Allah (King), [69](#), [74](#), [125](#), [125](#), [133](#), [141](#), [163](#), [164](#)

  “Aramcons” and families visited by, [165–166](#), [167](#), [167](#)

Al Sa’ud, Fahd (King), [42](#), [69](#), [95](#), [108](#), [109](#), [111](#), [163](#)

Al Sa’ud, Faysal (King), [56](#), [206](#), [211](#), [3](#), [4](#), [4](#), [6](#), [10](#), [13](#), [19](#), [42](#), [44](#), [49](#), [52](#), [81](#)

  First Five-Year Development Plan, [49](#)

  Kennedy (U.S. President) and, [19–20](#)

  Second Five-Year Development Plan, [52](#), [81](#)

Al Sa’ud, ibn Muhammad, [7](#)

Al Sa’ud, Imam ‘Abd al-Rahman, [7](#)

Al Sa’ud, Khalid (King), [37](#), [37](#), [52](#), [62](#), [64](#), [69](#)

Al Sa’ud, Muhammad ibn, [7](#)

Al Sa’ud, Sa’ud (King), [174](#), [185](#), [196](#), [3](#), [6](#), [10–11](#), [19](#), [207](#)

  Aramcons and families reception hosted by, [207](#)

Al Sa’ud, Sa’ud ibn ‘Abd al-‘Aziz Al-Zayd (Sa’ud Al-Kuwaiti), [108](#)

Al Sa’ud, Turki ibn ‘Abd Allah, [7](#)

Al Sa’ud Dynasty, [5](#), [7](#), [7](#)

Sa’ud Al-Kuwaiti (Al Sa’ud, Sa’ud ibn ‘Abd al-‘Aziz Al-Zayd), [108](#)

Saudi Arab Government (SAG), [162](#)

Saudi Arabia, *iv*, *xi*, *xii*, *xiii*, *xv*, [46](#), [49](#), [54](#), [54](#), [131](#), [132](#), [135](#), [138](#), [206](#), *ix*. See *also*

  cross-cultural relationships; Eastern Province; Al Sa’ud (Kings); Saudi Arabian Oil Co. (Saudi Aramco)

  frayed relationship with Aramco, [162–163](#), [165](#), [168](#)

  General Agreement of Participation, [41](#), [42](#), [45](#)

  modernization plans of, [210–211](#), [4](#), [163](#), [207](#)

  ownership of Arabian American Oil Co. (Aramco), [29](#), [40–41](#), [45–46](#), [64](#), [69](#), [159](#)

  stratigraphy of Eastern Saudi Arabia, [173](#)

  “swing producer,” [31–32](#)

  transformation of society, [54](#), [54](#), [56](#)

*Saudi Arabia* (Twitchell), [39](#)

Saudi Arabia-Kuwait Neutral Zone, [96](#), [138](#), [201](#)

Saudi Arabian Marketing and Refining Co. (Samarec), [108](#), [109](#), [110](#), [170](#)

Saudi Arabian Oil Co. (Saudi Aramco). See *also* Arabian American Oil Co. (Aramco); “Aramcons”; California Arabian Standard Oil Co. (Casoc); downstream operations; operations data; Saudi Arabia; upstream operations

  company leadership, [204–205](#)

  corporate air fleets, [140](#), [140](#)

  diversification, [92](#), [93](#), [95](#), [95](#), [96](#)

  employee identification badges, [80](#)

  logo, [136](#), [136](#)

  Oil Spill Contingency Plan, [104](#), [105](#)

  social responsibility evolution, [164](#), [164](#), [165](#), [165](#)

  Star Enterprise, [95](#), [95](#), [96](#)

  United States of America (USA) and, [153](#), [161](#), [189](#), [196](#)

Saudi Arabian Tankers Co., Ltd. (Satco), [201](#)

Saudi Arab Manpower Committee (SAMCOM), [64](#)

Saudi Aramco. See Saudi Arabian Oil Co.

Saudi Aramco Exhibit in Dhahran, [92](#), [92](#)

Saudi Aramco Sino Co. Ltd. (SASC), [153](#)

*Saudi Aramco World*, [170](#). See *also* *Aramco World*

Saudi Basic Industries Corporation (SABIC), [92](#), [162](#)

“Saudi Camp,” [13](#)

Saudi Camp School, [110](#), [110](#), [113](#)

Saudi Consolidated Electrical Co. (SCECO), [60](#), [60–61](#), [61](#), [62](#)

Saudi Development Committee, [46](#)

Saudi Electric Co., [62](#), [199](#), [199](#)

Saudi-Kuwait Neutral Zone, [142](#), [197](#)

Saudi National Guard, [20](#), [20](#), [105](#)

Saudi Refining Inc., [124](#), [124](#)

Saudi workers, [76](#), [76](#), [77](#), [77](#), [87](#), [89](#), [100](#), [101](#), [117](#), [117](#), [133](#), [136](#), [139](#), [139](#), [158](#), [160](#). See *also* workforce

“Saudization,” [139](#), [139](#), [176](#), [46](#), [48](#), [63–64](#), [69](#), [73](#)

scale of operations, [34](#), [36](#)

Scandinavia, [194](#), [194](#)

scanning electron microscope, [177](#), [177](#)

SCECO (Saudi Consolidated Electrical Co.), [60](#), [60–61](#), [61](#), [62](#)

Schloesslin, Jack, [76](#)

scholarships, [180](#), [180](#), [192](#), [192](#), [193](#), [211](#), [212](#), [212](#), [213](#), [213](#), [47](#), [50](#), [50](#), [51](#), [111](#), [137](#), [164](#). See *also* education

schools. See education and training

Scottsdale, Arizona (USA), [42](#)

Sea Island, Ras Tanura, [31](#), [31](#), [81](#), [81](#), [148–149](#), [149](#), [185](#)

seawater injection system, [54](#), [55](#), [55](#)

seawater treatment, [35](#), [35](#), [52](#), [82](#), [102](#), [152](#)

Second Five-Year Development Plan, [52](#), [81](#)

“seconding” (lending employees), [62](#)

sedimentary rock, [74](#), [79](#), [79](#), [81](#), [87](#)

sedimentologists, [177](#)

seeps (oil seeps), [16](#), [16](#), [17](#), [18](#)

Seflan, Ali, [178](#), [179](#)

Seismic Camps, [18](#), [18](#)

seismic technology, [106](#), [22](#), [22](#), [112–113](#), [114](#), [115](#), [118](#), [118](#), [119](#), [156](#)

    upstream operations, [170](#), [178](#)

self-development, [135–137](#)

“sell my quota,” [79](#), [80](#), [88–89](#), [91](#)

Seminole, Oklahoma (USA), [23](#)

semiskilled/skilled labor, [175–176](#)

“senior” category, [159](#), [165](#)

senior staff camp, [165](#)

Seoul University (Republic of Korea), [134](#), [134](#)

“Sewage Acres” (Victory Gardens), [112](#), [113](#), [115](#), [115](#)

Al-Shahrani, Saeed H., [139](#), [139](#)

Shaikh, Noora, [152](#), [152](#)

Shakespear, William (Captain), [6](#), [7](#)

Al-Shalfan, ‘Abd al-‘Aziz, [80](#)

Shanghai, [153](#)

*Shari’ah* (Islamic law), [54](#), [7](#)

al-Sharq Hospital in al-Khobar, [181](#)

Shauby (driver), [67](#), [67](#)

Shaybah, [16](#), [18](#), [77](#), [89](#), [98–99](#), [119–120](#), [121](#), [122–123](#), [123](#), [125](#), [129](#), [129](#), [137](#), [138](#), [144](#), [150](#), [152](#)

    upstream operations, [177](#), [177](#), [182](#), [182](#)

Shaykh of Kuwait, [5](#), [7](#)

Shedgum, [145](#), [145](#), [146](#), [174](#), [174](#), [31](#), [49](#), [53](#), [53](#), [57](#), [58](#), [63](#), [81](#), [87](#), [89](#), [158](#)

    downstream operations, [185](#)

    operations data, [199](#), [199](#)

Sheikh, Salwa S., [151](#), [151](#)

Shell in Jubail (SASREF), [188–189](#), [189](#)

Shell Oil Co., [79](#), [40](#), [108](#), [124](#), [124](#)

Al-Shihabi, Nadia, [59](#)

shipping, [77](#), [83](#), [83](#), [108](#), [108](#), [155](#), [158](#), [158](#)

    downstream operations, [191](#)

    operations data, [196](#)

Showa Shell Sekiyu K.K., [153](#), [157](#), [157](#)

Showa Shell Solar (Solar Frontier K.K.), [161](#)

shrimping, [23](#), [23](#)

Shubukshi, ‘Abd Al-Majid, [64](#), [64](#)

Sidon, [131](#), [132](#), [133](#), [133](#), [134](#), [135](#), [157](#), [33](#)

Sidon price claims, [7](#), [10](#), [19](#)

Signal Hill, California (USA), [23](#)

Silicon Valley, California (USA), [77](#)

Silurian age, [170](#), [170](#)

silver riyals, [195](#), [195](#), [210](#), [10](#), [10](#)

Sinai Desert, [204](#), [20](#)

Sinclair Exploration Co., [47](#), [47](#)

Al-Sindi, Badria, [59](#)

Singapore, [153](#), [162](#)

single-point moorings (SPM), [186](#)

sinkholes, [79](#), [79](#), [82](#)

Sinopec Corp., [141](#), [153](#)

Sinopec SenMei (Fujian) Petroleum Co. Ltd. (SSPC), [153](#), [157](#), [157](#)

Sino Saudi Gas Limited, [141](#)

*Sirius Star* (tanker), [155](#)

Six-Day War, [20](#), [20](#), [22](#)

60/40 profit sharing, [4](#)

Skinner, E. A. “Ed,” [30](#), [30](#), [43](#), [81](#)

skyhook, [133](#), [135](#), [135](#)

slugs, [183](#)

“smart” wells, [144](#), [181](#)

Smith, Ernest, [76](#)

Smith, Felix T., [130](#)

Snamprogetti, [147](#)

Snyder, Harry R., [174](#), [174](#), [175–176](#), [177](#)

Snyder, Les, [137](#)

Snyder, Thorn, [52](#)

Socal. See Standard Oil Co. of California

soccer, [138](#)

social responsibility evolution, [164](#), [164](#), [165](#), [165](#)

Societe Franco-Iranniene Des Recherches, [47](#), [47](#)

Societe Industrielle Des Asphaltes Et Petroles De Lattaquie, [47](#), [47](#)

Society of Exploration Geophysicists, [145](#)

Socony-Vacuum Oil Co. (Standard Oil Co. of New York), [29](#), [129](#).

    See also Arabian American Oil Co. (Aramco)

“soft” side of business, [155](#), [186](#), [135](#), [135](#)

S-Oil Corp. (SsangYong Oil Refining Co.), [107](#), [107](#)

Solar Frontier K.K. (Showa Shell Solar), [161](#)

solar power, [161](#)

Al-Somali, Ahmad “Mussolini,” [77](#), [77](#)

Sorbonne in Paris, [5](#)

source rock, [174](#)

sour gas, [183](#)

sour oil, [152](#), [153](#)

South Africa, [138](#), [78](#)

Southampton, England, [104](#)

Southeast Asia, [112](#)

Southern Area Oil Operations, [82](#), [89](#), [142](#)

Southern Area Producing, [46](#)

Southern Area Projects, [128](#)

South Pier, Ras Tanura, [185](#)

South Rub’ al-Khali Co. Ltd. (SRAK), [141](#)

Soviet Union (Russia), [5](#), [8](#), [18](#), [20](#), [21](#), [21](#), [40](#), [119](#), [171](#), [193](#), [204](#), [4](#), [20](#), [43](#), [70](#), [141](#)

Al-Sowayigh, Saleh, [148](#)

Spain, [141](#), [182](#)

Special Clerical Training Center, [59](#), [59](#)

Speers, Peter C., [149](#), [163](#), [207](#), [7](#), [7](#)

Spindletop, Texas (USA), [23](#)

spiral cable-drill bit, [82](#), [82](#)

SPM (single-point moorings), [186](#)

spudding, [73](#), [76–78](#), [144](#)

SRAK (South Rub’ al-Khali Co. Ltd.), [141](#)

SsangYong Oil Refining Co. (S-Oil Corp.), [107](#), [107](#)

*SS Exochorda*, [69](#)

SSPC (Sinopec SenMei (Fujian) Petroleum Co. Ltd.), [153](#), [157](#), [157](#)

“stabbing board,” [82](#), [82](#), [100](#)

stabilization facilities, [182](#)

Stalin, Joseph, [119](#)

Standard Oil Co. of California (Socal), [19](#), [20](#), [22](#), [24](#), [24–25](#), [25–26](#), [26](#), [27](#), [28](#), [29](#), [30](#), [34](#), [39](#), [41](#), [42](#), [43](#), [46–47](#), [47](#), [48](#), [48](#), [49](#), [50](#), [51](#), [51](#), [52](#), [55](#), [56](#), [56](#), [57](#), [57](#), [61](#), [63](#), [78](#), [79](#), [81](#), [86](#), [87](#), [98](#), [104](#), [128](#), [129](#), [130–131](#), [142](#), [16](#), [42](#), [69](#), [166](#), [205](#). See also Arabian American Oil Co. (Aramco); California Arabian Standard Oil Co. (Casoc); Texas Co., The (Texaco)

    war years (World War II), [98](#), [104](#)

Standard Oil Co. of New York (Socony). See also Arabian American Oil Co. (Aramco); Standard Oil of New Jersey (Jersey, Exxon), [22](#), [129](#), [130](#), [131](#), [138](#)

Standard Oil of California (Chevron), [29](#). See also Arabian American Oil Co. (Aramco)

Standard Oil of Indiana, [23](#)

Standard Oil of New Jersey (Jersey, Exxon). See also Arabian American Oil Co. (Aramco); Standard Oil Co. of New York (Socony), [20](#), [22](#), [26](#), [129](#), [130](#), [131](#), [138](#), [200](#), [4](#), [5](#), [29](#), [36](#), [39](#), [41](#), [42](#), [64](#), [109](#), [125](#)

Stanford University (USA), [72](#), [212](#), [49](#), [77](#)

Stapleton, T. “Vic,” [129](#)

Star Enterprise, [95](#), [95](#), [96](#)

Statfjord, [80](#), [80](#)

steel from USA for construction, [115](#), [121](#), [121](#), [125](#), [131](#), [132](#), [132](#)

*Steel Worker* (cargo ship), [140–141](#), [140–141](#)

Stegner, Wallace, [100](#)

Steineke, Florence, Maxine, and Marian, [83](#)

Steineke, Max, [24](#), [24](#), [63](#), [72](#), [73](#), [73](#), [74](#), [75](#), [75](#), [79](#), [81–82](#), [84](#), [84](#), [85](#), [87](#), [89](#), [102](#), [103](#), [104](#), [105](#), [105](#), [106](#)

    legacy, [156–157](#)

“stepout,” [146](#)

Stewart, Jim, [149](#)

stock market (USA), [37](#), [37](#)

Stoner, R. C., [204](#), [205](#)

Strait, Donald, [179](#), [179](#)

stratigraphic petroleum traps, [174](#), [174](#)

striking workers, [158–159](#), [160](#), [161](#), [184–186](#)

structural petroleum traps, [174](#)

structure drilling, [81](#), [180](#)

study-abroad program, [190](#), [190](#)

Al-Subaey, Ahmed A., [153](#)

Al-Suba’y, Wasib, [185](#)

subjects (providing for) goal of King ‘Abd al-‘Aziz, [3–4](#), [14](#), [37](#), [39](#), [90](#), [111](#), [120](#)

submarine loading lines, [90](#), [33](#), [33](#)

submarine pipeline, [143](#)

succession planning system, [48](#)

Suez Canal, [18](#), [94](#), [94](#), [120](#), [131](#), [196](#), [203–206](#), [210](#), [10](#), [23](#), [33](#)

Sulaiman, ‘Ali ibn Ahmad, [154](#), [154](#)

Sulaiman, Jasim ibn Muhammad, [154](#), [154](#)

Sulaiman, Shaikh Abdulla, [138](#)

Al-Sulayman, ‘Abd Allah, [34](#), [34](#), [50](#), [52](#), [52](#), [53](#), [53](#), [55](#), [56](#), [56](#), [90](#), [101](#), [142](#), [146](#), [146](#), [148](#), [162](#), [173](#)

sulfur, [139](#), [139](#), [158](#), [183](#), [199](#)

Sultan of Najd and Its Dependencies, [3](#). See also Al Sa’ud, ‘Abd al-‘Aziz ibn ‘Abd al-Rahman (King)

Sumatra, [18](#), [23](#)

Sumitomo Chemical Co., Ltd., [163](#), [188](#), [192](#)

*Sun and Flare*, [158](#)

Al-Sunayyin, Muhammad, [63](#)

supertankers, [135](#), [205](#), [205](#), [23](#), [31](#), [31](#), [100](#), [100](#), [108](#), [108](#), [148–149](#), [149](#)

    downstream operations, [186](#), [186](#)

Supplement Agreement, [98](#), [104](#), [127](#), [68](#), [95](#)

supply and demand, [125–126](#), [128](#), [5](#), [23](#), [31](#), [32](#), [38](#), [95](#), [118](#), [124](#), [128](#), [134](#), [142](#), [143](#), [152](#), [153](#), [160](#), [161](#)

Supply and Transportation, [104](#), [108](#)

*suq* (open-air market), [6](#), [6](#), [9](#), [10](#), [10–11](#), [38](#), [38](#), [184](#), [184](#), [185](#), [185](#)

suspicion of outside influence by King ‘Abd al-‘Aziz, [5](#), [14](#), [16](#), [35](#), [55](#), [98](#)

Sutherland, George, [108](#), [108](#)

SWCC (Saline Water Conversion Corp.), [199](#), [199](#)

“sweet” crude, [143](#)

sweetening, [190](#)

sweet gas, [183](#), [199](#)

“swing producer,” [31–32](#)

Sydney Povers Award, [147](#)

Syria, [8](#), [8](#), [36](#), [131](#), [132](#), [134](#), [191](#), [196](#), [20](#), [22](#), [33](#), [38](#), [42](#), [43](#), [44](#)

**T**

Taher, Abdul Hady, [7](#), [7](#)

Tahir, Sa’id M., [46](#)

Taibah, Mahmoud, [190](#), [190](#)

Al-Taifi, Haifa, [59](#)

Taiwan, [153](#), [157](#)

Tamayshah, [39](#), [39](#)

Al-Tamimi, ‘Ali, [181](#), [182](#), [182](#), [183](#)

Tampico, Mexico, [23](#)

Tanjib, [81](#), [86](#), [86](#), [105](#), [157](#)

tank crew (Saudi), [103](#), [103](#)

tankers, [90](#), [131](#), [143](#), [204](#), [204](#), [205](#), [205](#), [23](#), [33](#), [33](#), [81](#), [81](#), [83](#), [83](#), [108](#), [155](#)

    downstream operations, [185](#), [191](#)

Tanner, Lawrence “Larry,” [16](#), [63](#)

Tapline. See Trans-Arabian Pipeline

Tariki, Abdullah H., [207](#), [210](#), [210](#), [211](#), [211](#), [4](#), [6](#), [7](#)

Tarut Bay, [157](#), [160](#), [160](#)

Tarut Island, [62](#), [73](#), [165](#), [165](#)

Al-Tawil, Aus, [117](#), [117](#)

taxes collected by USA on Aramco’s operations, [197](#), [198](#), [200](#)

Tayif, [8](#), [41](#)

Taylor, Lee, [169](#), [169](#)

Taylor, William F., [29](#)

Al-Tayyar, Haytham Ahmad, [117](#)

team sports, [138](#), [138](#)

technological achievements of Saudi Aramco, [xi](#)

technological advances, [23](#), [144–146](#)

technology transfer, [19–20](#)

technology updates, [112–113](#)

tectonic plates and oil, [74](#), [75](#)

Tehran Agreement, [39–40](#)

telephone exchanges, [142](#)

television, [158](#), [172](#), [177](#), [177](#), [19](#)

Temple High School, Philadelphia (USA), [72](#)

temporary housing, [88](#), [88](#), [78](#)

terminals, downstream operations, [185–186](#)

Test of English as a Foreign Language (TOEFL), [71](#)

Texaco. See Texas Co., The

Texas (USA), [23](#), [41](#), [124](#), [182](#)

Texas A&M College (USA), [137](#)

Texas A&M University (USA), [14](#), [145](#), [146](#)

Texas Company, The (Texaco), [48](#), [78–79](#), [95](#), [124](#), [128](#), [129](#), [130–131](#), [164](#), [177](#), [29](#), [41](#), [42](#). See also Arabian American Oil Co. (Aramco); Standard Oil Co. of California (Socal)

Texas Eastern Engineering Ltd., [52](#)

*thawbs*, [102](#)

theodolites, [85](#)

thermal cracking, [23](#)

thermal cracking, refining process, [187](#)

Thomas, John “Johnny,” [102](#), [103](#)

three-dimensional technology, [113](#), [113](#), [114](#), [115](#), [118](#), [118](#), [119](#), [156](#)

    upstream operations, [168](#), [168](#), [178–179](#), [179](#)

thumper (vibroseis) trucks, [113](#), [113](#)

Thuwal, [163](#)

Tigris River, [18](#), [69](#)

Time magazine, [191](#), [19](#)

Titusville, Pennsylvania (USA), [19](#), [23](#)

TOEFL (Test of English as a Foreign Language), [71](#)

Tokyo, [98](#), [153](#)

Tokyo Stock Exchange, [38](#), [38](#)

toluene, [192](#), [193](#), [193](#)

Total Finat, [125](#)

Total of France, [141](#), [153](#), [189](#)

Total Quality Management, [127](#)

Total Refining and Petroleum Co. (SATORP), [188–189](#)

TPC. See Turkish Petroleum Co. (TPC)

trachoma, [180](#)

Tracy, Bill, [169](#), [169](#)

Tracy, Frank, [80](#), [80](#), [15](#)

Tracy, Frank William, Jr. “Bill,” [15](#)

Tracy, James R. and Claudia, [77](#)

Tracy, Margret, [15](#), [15](#)

traditional Saudi attire, [63](#), [63](#)

Traffic Safety Signature Program, [165](#)

Training, [213](#)

training. See education and training

Training and Career Development, [34](#), [46](#), [77](#)

train system, [136–137](#), [137](#), [140](#)

Trans-Arabian Pipeline (Tapline), [122](#), [122](#), [128](#), [129](#), [131–135](#), [136](#), [182–184](#), [191](#), [193](#), [196](#), [203](#), [205](#), [4](#), [7](#), [10](#), [33](#), [33](#), [38](#), [62](#)

Transjordan. See Jordan

Translation, [75](#)

Transportation, [77](#)

traps, [170](#), [174](#), [174](#)

travel difficulties in Saudi Arabia, [61](#), [62](#), [62](#), [63](#)

traverse map, [69](#)

Treaty of ‘Uqayr (1922), [14](#)

*Tri District Quiz* (TV show), [177](#)

“true Saudization,” [46](#), [48](#)

Truman, Harry (U.S. President), [143](#), [171](#)

Al-Tu’aimi, Saleh A., [47](#), [47](#)

Tufley, Ralph, [168](#), [168](#)

Tulsa, Oklahoma (USA), [23](#)

Turaif, [134](#)

Turaiki, Saad A., [82](#), [142](#)

Turkey, [20](#), [21](#)

Turkish Petroleum Co. (TPC), [17](#), [17](#), [21](#), [22](#), [22–23](#), [26](#), [47](#), [47](#)

Tuwaiq Escarpment, [79](#), [79](#), [81](#)

Tuwaiq Mountains, [102](#)

Twitchell, Karl S., [15](#), [15](#), [32](#), [32–33](#), [36](#), [37](#), [39](#), [39](#), [41](#), [43](#), [43](#), [46](#), [47](#), [48](#), [49](#), [50](#), [50](#), [201](#)

Twitchell, Nona, [48](#)



**U**

‘Udhailiyah, [44](#), [44](#), [82](#)  
‘Ujman tribe, [85](#)  
al-‘Ula, [176](#), [176](#)  
ULCCs (ultra-large crude carriers), [108](#)  
ultimate recovery, [114–118](#)  
ultra-large crude carriers (ULCCs), [108](#)  
Um Er Rus (Umm al-Rus), [71](#)  
*Umm al-Qura*, [56](#), [98](#)  
Umm al-Qura University, Makkah (College of Shari’ah), [173](#)  
‘Unayzah, [52](#)  
“undulating plateau,” global oil production, [135](#)  
United Arab Emirates (UAE), [206](#)  
United Arab Republic, [5](#)  
United Kingdom, [35](#), [104](#)  
United Nations, [131](#), [132](#), [196](#), [206](#)  
United States of America (USA), [6](#), [20](#), [21](#), [22](#), [24](#), [29](#), [43](#), [48](#), [56](#), [62](#), [68](#), [96](#), [97](#), [114](#), [114](#), [115](#), [119–120](#). See *also* Arabian American Oil Co. (Aramco); California Arabian Standard Oil Co. (Casoc); cross-cultural relationships; Texas Co., The (Texaco); (World War II); *specific Standard Oil companies*  
‘Abd al-‘Aziz’s (King) view of Americans, [55](#)  
automobiles, [19](#), [19](#), [23](#), [126](#)  
conservation efforts, [80](#)  
crude oil reserves, [22–23](#)  
diplomats in Saudi Arabia, [127](#), [127](#)  
domestic supply-demand gap for oil, [31](#)  
fuel efficiency standards, [40](#)  
gasoline rationing in, [114](#), [114](#), [126](#)  
gasoline shortages, [43](#), [43](#)  
Great Depression, [13](#), [24](#), [29](#), [40](#), [44](#), [52](#), [54–55](#), [89](#), [120](#)  
Gulf War casualties, [103](#)  
importer of oil, [126](#)  
oil discoveries in, [23](#)  
oil producer, [70](#)  
refining and marketing alliance, [124](#), [124](#)  
Saudi Arabian Oil Co. (Saudi Aramco) and, [153](#), [161](#), [189](#), [196](#)  
taxes collected on Aramco’s operations, [197](#), [198](#), [200](#)  
University of Cairo, [207](#), [7](#), [141](#)  
University of California, Irvine (USA), [33](#)  
University of California at Berkeley (USA), [68](#), [149](#)  
University of Damascus, [13](#)  
University of Edinburgh, [172](#)  
University of North Carolina (USA), [77](#)  
University of Petroleum and Minerals (College of Petroleum and Minerals), [173](#), [173](#), [179](#), [13–14](#), [20](#), [48](#), [72](#), [72](#), [74](#), [142](#), [157](#)  
University of Riyadh (King Sa‘ud University), [173](#)  
University of Southern California (USA), [77](#)  
University of Texas (USA), [208–209](#), [145](#)  
University of Tulsa, Oklahoma (USA), [88](#)  
upstream operations, [93](#), [170–183](#). See *also* downstream operations; operations data  
drilling and reservoir engineering, [180–181](#)  
exploration, [176](#)  
fossil record, [176–177](#)  
gas production and processing, [182](#), [183](#)  
geological timeline of Saudi Arabia, [172](#)  
oil, origins of, [74–75](#), [170–171](#)  
oil and gas fields of Saudi Arabia, [175](#), [175](#)  
oil production and processing, [182](#)  
petroleum traps, [170](#), [174](#), [174](#)  
reservoir characterization, [179](#)  
reservoir nano-agents (resbots), [180](#)  
seismic imaging, [178](#)  
stratigraphy of Eastern Saudi Arabia, [173](#)  
Upstream Professional Development Center, [179](#)  
al-‘Uqayr, [3](#), [5](#), [8](#), [9](#), [63](#), [65](#)  
al-‘Uqayr (Uqayr Conference), [3–4](#), [4](#), [12](#), [12](#)  
al-‘Uqayr agreement, [14–16](#), [35](#), [42](#), [43](#)  
Urdu, [196](#)  
U.S. Army, [77](#)

U.S. Construction Industry Institute, [126](#)  
U.S. Consulate, [116](#), [119](#), [119](#), [127](#), [127](#), [22](#)  
U.S. National Security Council, [201](#)  
U.S. Navy, [19](#), [115](#), [125–126](#), [162](#), [82](#)  
U.S. State Department, [198](#), [199](#), [200](#)  
U.S. Treasury Department, [200](#)  
USA. See United States of America (USA)  
USS *Murphy*, [120](#)  
USS *Quincy*, [94](#), [94](#), [120](#)  
Utah (USA), [182](#)  
Al-Utaibi, Dhaifallah A. F., [63](#), [104](#), [105](#), [108](#), [112](#)  
Al-‘Utayshan, ‘Abd Allah, [206](#)  
‘Uthmaniyah, [146](#), [82](#), [87](#), [89](#), [102](#), [158](#), [199](#), [199](#)

**V**

value engineering, [128](#)  
Van Leeuwen, I.J.S., [53](#), [53](#)  
Van Peurse, Bob, [149](#)  
Vardinoyannis family, [107](#)  
Vedakumar, Vedamuth J., [139](#), [139](#)  
Vela (sails), [83](#)  
Vela International Marine Limited, [77](#), [83](#), [83](#), [108](#), [108](#), [155](#), [158](#), [158](#), [191](#), [196](#)  
Venezuela, [23](#), [24](#), [138](#), [198](#), [4](#), [5](#), [22–23](#), [78](#), [133](#)  
Versailles Peace Conference in 1919, [40](#)  
very large crude carriers (VLCCs), [83](#), [83](#), [108](#), [155](#), [191](#)  
vibrois (thumper) trucks, [113](#), [113](#)  
vice president of Aramco, first Saudi, [46](#), [46](#)  
Victory Gardens (“Sewage Acres”), [112](#), [113](#), [115](#), [115](#)  
Vidal, F. S. “Rick,” [149](#)  
visbreaking, refining process, [187](#)  
vision of King ‘Abd al-‘Aziz, [166](#)  
VLCCs (very large crude carriers), [83](#), [83](#), [108](#), [155](#), [191](#)  
volatile organic compounds, [124](#)  
volunteerism, [164](#), [164](#)

**W**

Wadi al-Sahba, [102–103](#), [103](#)  
Wadi Muhrim, [41](#), [41](#)  
Wadi Nisab, [75](#), [75](#)  
*wadis* (riverbeds), [39](#), [150](#)  
al-Wafrah, [201](#)  
wages, [157](#), [158](#), [160](#), [184](#), [185](#), [186](#), [195](#), [195](#)  
Wahbah, Hafiz, [210](#), [211](#), [211](#)  
Al-Wahhab, Shaykh Muhammad ibn ‘Abd, [7](#), [149](#)  
War Production Board in Washington, D.C. (USA), [128](#), [129](#)  
warrior skills of King ‘Abd al-‘Aziz, [3](#), [5](#)  
Washington, D.C. (USA), [148](#), [196](#), [213](#), [160](#)  
wastewater recycling, [109](#)  
water importance, [15](#), [15](#), [39](#), [40](#), [40](#), [41](#), [41](#), [43](#), [43](#), [134](#), [136](#), [136](#), [137](#), [170](#)  
water injection wells, [180](#)  
water testing, [179](#), [179](#)  
Weathers, L. T. “Stormy” (Colonel), [120](#)  
Web-based Operator Training Simulation, [136](#)  
Webster, Ken, Mildred “Mimi,” Susan, and Judy, [164](#), [164](#)  
*Weekly Caravan, The (Al-Qafilah al-Usubu’iyyah)*, [158](#)  
Well No. 7 (Dammam Dome), [76](#), [76](#), [78](#), [82](#), [83](#), [84](#), [86](#), [87](#), [87](#), [89](#), [90](#), [95](#), [99](#), [105](#), [74](#), [74](#), [166](#)  
Well Samples and Laboratory Unit (Core Store), [117](#), [117](#)  
Western culture. See cross-cultural relationships (Saudi and Western)  
Western wear, [102](#), [102](#)  
Westhampton, New York (USA), [151](#), [151](#)  
West Texas (USA), [23](#)  
West Texas Intermediate (WTI), [89](#), [162](#)  
Weyburn-Midale CO<sub>2</sub> Monitoring and Storage Project, [158](#)  
whale oil, [17](#)  
Whipple, Sam, [164](#), [169](#), [169](#)  
White, Allen C., [24](#), [24](#), [63](#), [63](#), [64](#), [71](#)  
White House, Washington, D.C. (USA), [190](#), [190](#)  
Wickstrom, Butch, [100](#)  
wildcatters, [76](#)  
wildcat wells, [180](#)

wildlife rescue operations, [106](#), [106](#)  
Williams, Guy “Slim,” [73](#), [73](#), [76](#)  
Williams Brothers, [134](#)  
Williamsport, Pennsylvania (USA), [138](#)  
Wilson, Ivan, [108](#), [108](#)  
Wilson, Woodrow (U.S. President), [36](#), [40](#)  
wire-line logs, [170](#)  
Witherspoon, Erma and Marilyn, [83](#), [83](#)  
women, professional, [75](#), [75](#), [77](#), [151](#), [151–152](#), [152](#), [158](#), [158](#). See *also* girls’ education  
first professional, [13](#), [13](#)  
Woods Hole Oceanographic Institution, Massachusetts (USA), [164](#)  
workforce, [115–116](#), [118](#), [119](#), [119](#), [120](#), [120](#), [33–34](#). See *also* expatriate workforce; Italian workers; Saudi workers  
history, [202–203](#)  
labor unrest, [158–162](#), [184–186](#)  
reduction, [108–111](#), [115](#), [10](#), [23](#), [79–81](#)  
wages, [157](#), [158](#), [160](#), [184](#), [185](#), [186](#), [195](#), [195](#)  
workman’s compensation, [101](#)  
World Bank, [126](#), [204](#)  
World Oil Awards, [180](#)  
World War I, [6](#), [8](#), [8](#), [19–20](#), [23](#), [29](#), [36](#), [135](#)  
World War II. See war years (World War II)  
WTI (West Texas Intermediate), [89](#), [162](#)

**X**

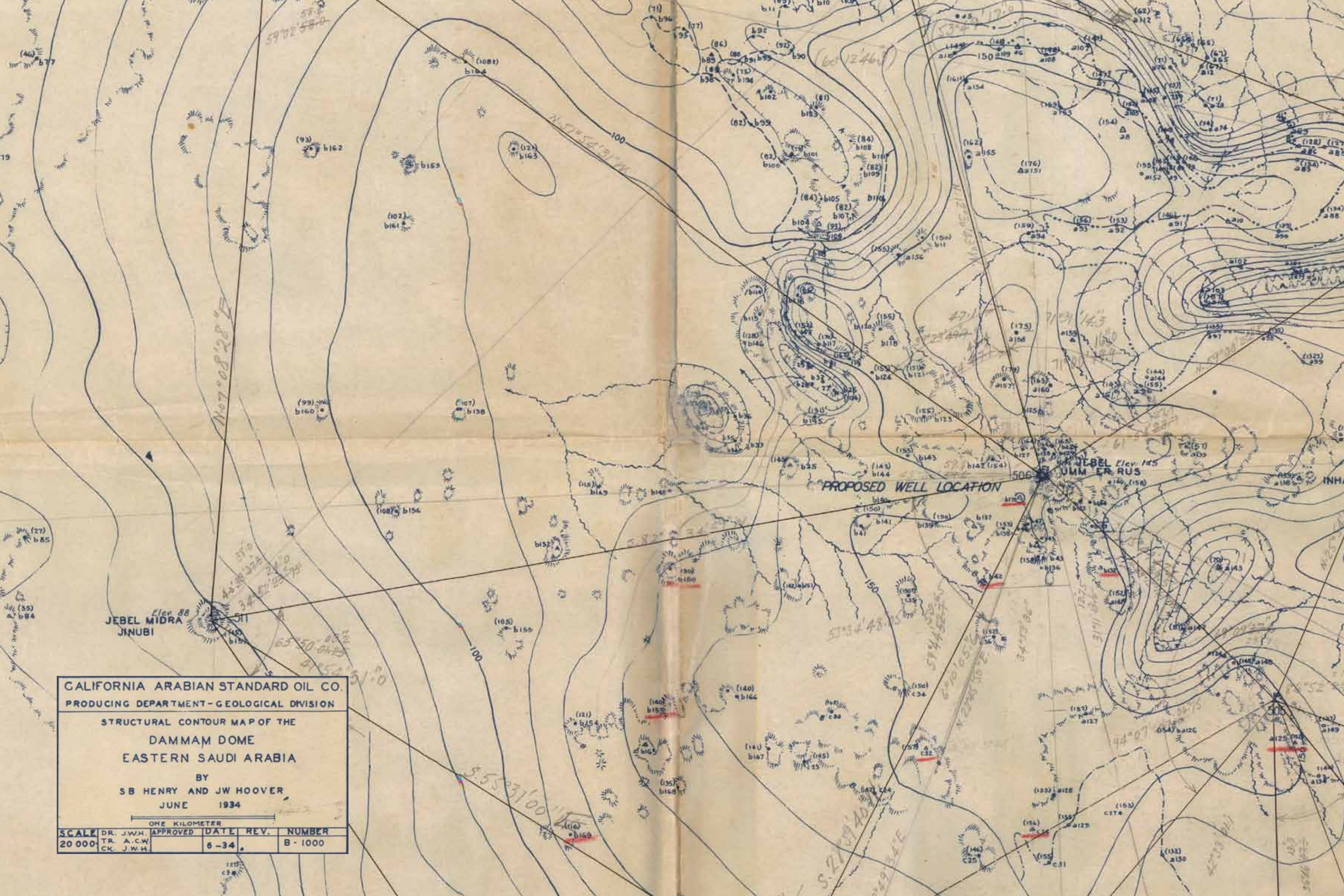
Xiao, Jin Jiang, [145](#), [145](#)  
xylenes, [192](#), [193](#), [193](#)

**Y**

Yalta Conference, [119](#)  
*al-Yamamah*, [172](#)  
Yamani, Ahmed Zaki, [7](#), [7](#), [10](#), [13](#), [22–23](#), [24](#), [24](#), [37](#), [37](#), [38](#), [39](#), [41](#), [42](#), [45](#), [46](#), [48](#), [63](#), [64](#), [69](#), [89](#)  
Yanbu’, [xv](#), [ix](#), [54](#), [57](#), [58](#), [100](#), [100](#), [108](#), [150](#), [153](#), [158](#)  
downstream operations, [185](#), [186](#), [188](#), [189](#), [190](#)  
operations data, [198](#), [198](#), [199](#), [199](#)  
Yasin, Yusuf, [50](#), [53](#), [53](#)  
Yassin, Shaikh Yusuf, [162](#)  
“Year of Innovation,” [137](#)  
“Year of Self-Development,” [136](#)  
Yemen, [36](#), [36](#), [37](#), [69](#), [79](#), [113](#), [142](#)  
Yergin, Daniel, [135](#)  
Yokohama, [40](#), [40](#)  
Yokoyama, Masayuki, [97](#)  
Youngstown State University, Ohio (USA), [72](#)  
Younis, Mohammed, [81](#), [81](#)  
Youth Welfare Presidency, [94](#)  
Yushatly, Martes, [88](#)

**Z**

Zagros Mountain, [75](#)  
Al-Zaid, Salih Sa‘d, [159](#), [159](#)  
Al-Za‘im, Husni, [132](#), [191](#)  
al-Zamil Heavy Industries, [147](#)  
Zarka, [33](#)  
*Zauruk* (tanker), [155](#)  
Al-Zawawi, Yousef, [183](#), [183](#)  
Zeeco, [89](#)  
Zinola, Ed, [35](#)  
Zuluf, [16](#), [36](#), [52](#), [58](#), [58](#), [82](#), [86](#), [103](#), [103](#)



CALIFORNIA ARABIAN STANDARD OIL CO.  
 PRODUCING DEPARTMENT - GEOLOGICAL DIVISION  
 STRUCTURAL CONTOUR MAP OF THE  
 DAMMAM DOME  
 EASTERN SAUDI ARABIA  
 BY  
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