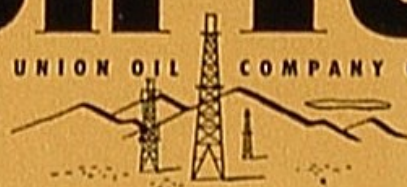


In
THE GULF OF MEXICO

AUGUST 1956

On Tour

WITH UNION OIL COMPANY OF CALIFORNIA



On Tour



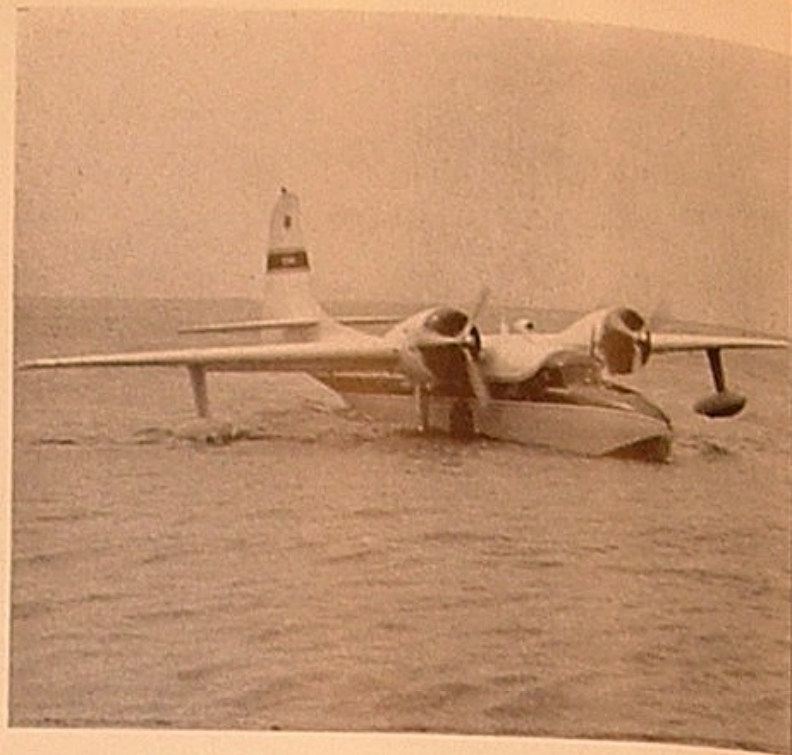
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"ON TOUR", pronounced "on tower," is an oil field expression meaning "on duty." Our magazine by that title is published monthly by Union Oil Company of California for the purposes (1) of keeping Union Oil people informed regarding their Company's operations and progress, and (2) of recognizing and encouraging the fine accomplishments of employee groups and individuals. We invite communications from our employee readers, whose thoughts, interests and opinions are carefully weighed in determining editorial policy. Address correspondence to ON TOUR, Union Oil Building, 617 West Seventh Street, Los Angeles 17, Calif.

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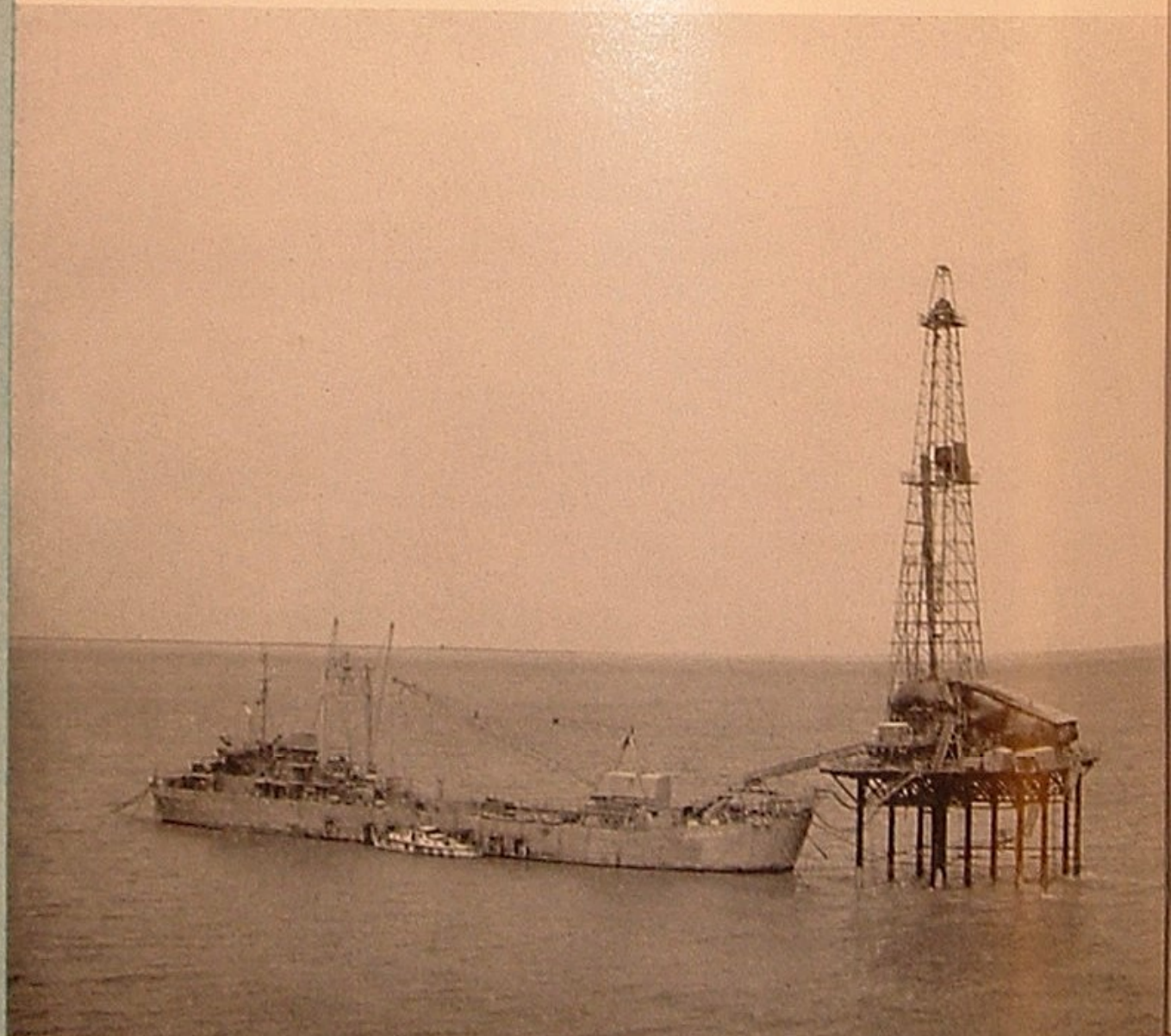


"There's your miracle; an airplane is taxiing alongside to effect a rendezvous."

The Oil Game

In The Gulf Of Mexico

"Within 10 minutes you've retraced a one-hour boat ride and are circling the offshore drilling operation at Block 26. Of course nobody suspects that the Gulf will soon boil here with an eruption of natural gas."



(That exciting boat ride to Union's Block 26, promised in the June issue of ON TOUR, will have to wait. The plot grew too exciting. Currently our crews are fighting a gas blowout in these Gulf of Mexico waters. Later we'll try to bring you a photographic account of what is taking place here. Meanwhile, let's move over to Breton Sound, the scene of Union Oil's first offshore discovery.)

IT SEEMS that airplanes take a special delight in performing miracles. For example: After having spent a night on Union Oil's Block 26 drilling platform in the Gulf of Mexico, you are heading back toward shore in a swift sea-going launch. It's a long two-hour boat ride across open water, through Vermilion Bay, and along Intracoastal Canal to the landing. At about the half-way point, as the boat rounds Marsh Island into quiet water, you begin to think of what a time-saver an airplane would be. Just then the helmsman looks around and nods toward portside. There's your miracle; an airplane is taxiing alongside to effect a rendezvous. It's the "Mallard." Presently Pilot Dan Mitchell and Co-pilot Jean LeBlanc pop out of the sleek amphibian's forward hatch with an invitation: "We're flying over to Breton Sound and New Orleans. Want to come along?"

Airborne a few minutes later, the "Mallard" scoffs at speedboats as a means of getting places. Within 10 minutes you've retraced a one-hour boat ride and are circling the offshore drilling operation at Block 26. A score of men line the rail of the tender as the "Mallard" banks round them in a wide arc. Of course nobody suspects that the Gulf will soon boil here with an eruption of natural gas.

Satisfying the camera's demand for aerial angles, Mitchell points the "Mallard" up and due east. Slowly, at 200 miles an hour, you creep over Marsh Island, East Cote Blanche Bay, Atchafalaya Bay. Then comes a hundred miles of green marsh and swamp, splotted with dozens of lakes, and entwined in a tangle of rivers, canals and bayous. Beautiful farms claim a few choice sections of the marsh country, and Cajun towns cling to the banks of navigable bayous.

LeBlanc points out the location of several good Union Oil fields in this marsh country. To the north are Big Bayou Pigeon, East Lake Palourde, College Point. To the south is Bay Junop. And in approximate bombing position under the airplane are shining field installations at Lake Hatch, Hollywood and Houma. In 20 years the Gulf Division has made valuable oil and gas discoveries here.

Steadily you creep on over Bayous Grand Caillou, Terrebonne, Point au Chien and Lafourche. Then across broad Barataria Bay you spot the Mississippi River. Milk-chocolate in color, it bears an enormous load of

silt out of the northwest. As if loath to lose its identity in the Gulf, the mighty stream follows a 20-mile-wide delta fully 50 miles to sea.

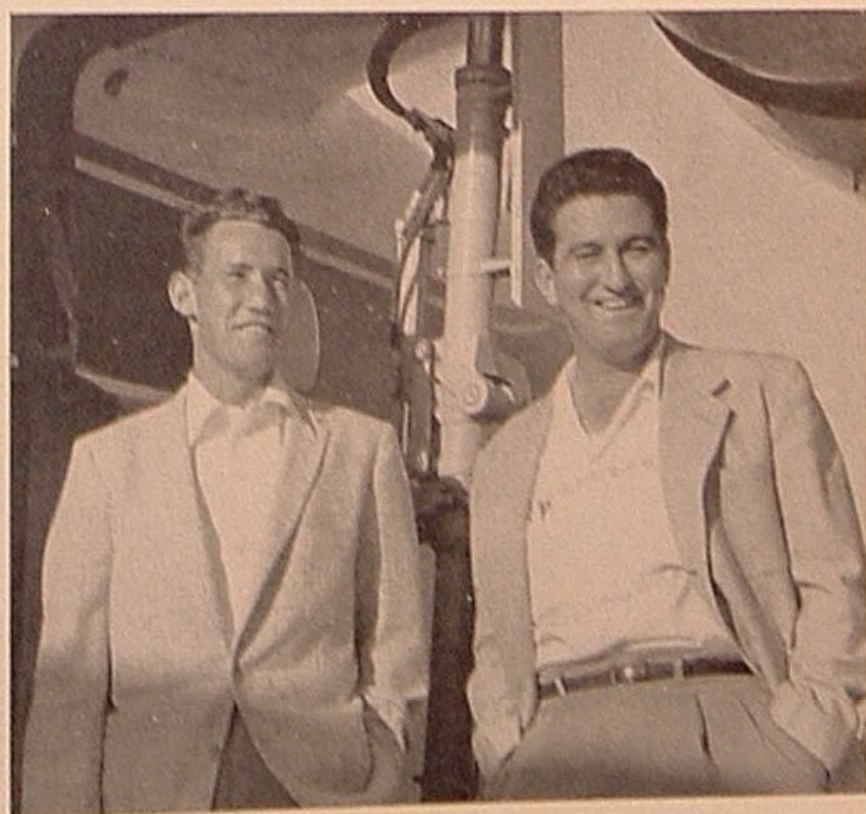
As you watch a procession of ships and barges ply the Mississippi toward or from New Orleans, a tell-tale pressure afflicts your ear drums. The "Mallard" is going downstairs just to the northeast of the Mississippi Delta, searching for an oil well somewhere in the brackish shallows of Breton Sound.

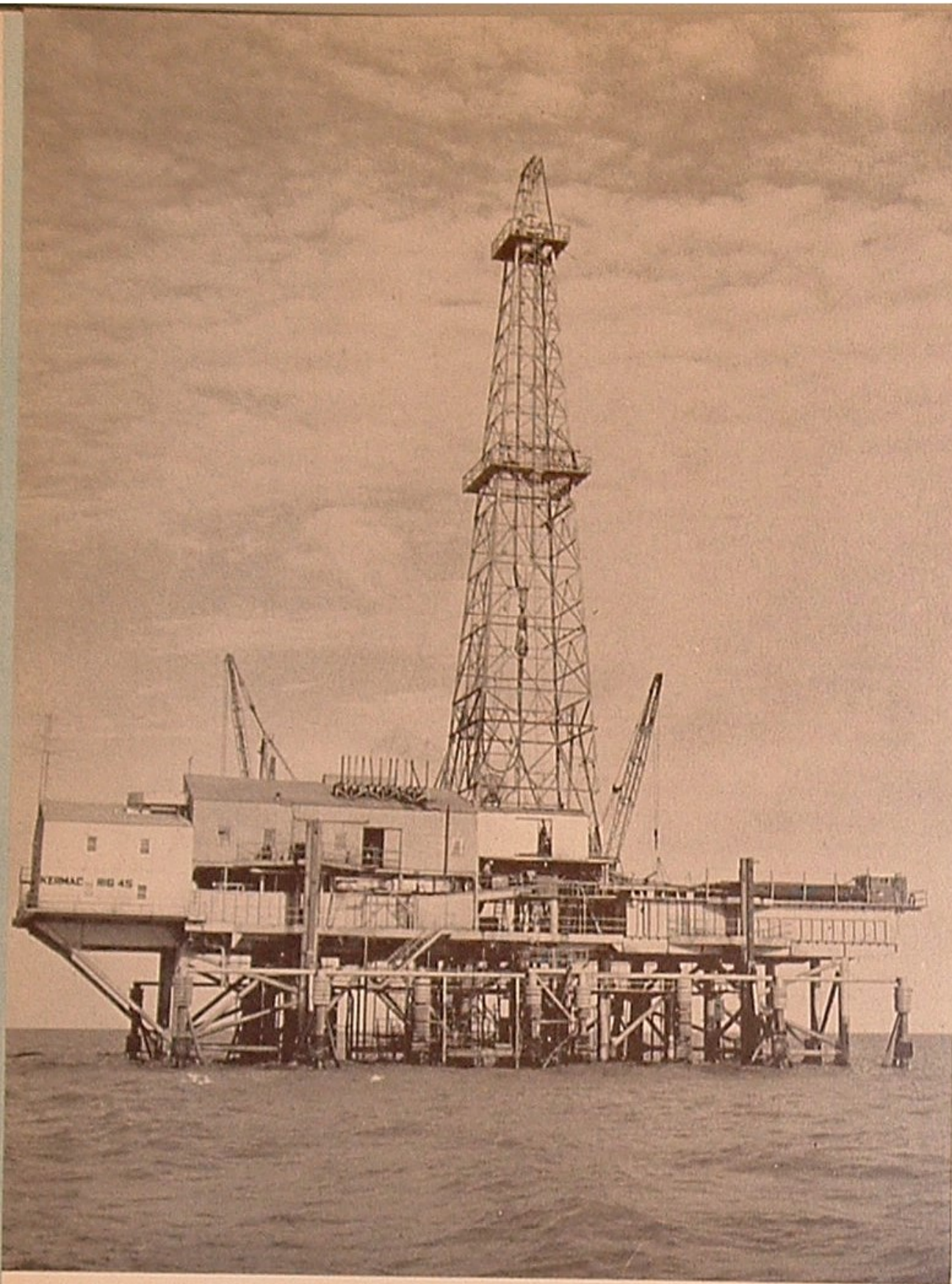
Though Union Oil has said little about its offshore exploration in Louisiana, Gulf Division people have been working hard and effectively on sea-bottom projects for more than a decade. As a result of gravity studies, the Company in 1947 leased from the State of Louisiana 20,000 acres of water bottoms known as Blocks 45, 46, 47, 52 and 53. Seismic operations were started immediately. Then in 1948, Union Oil invited Kermac (Kerr-McGee Oil Industries, Inc., of Oklahoma) to join the venture as a drilling partner. It was a mutually advantageous arrangement: Union had the land. Kermac had offshore drilling equipment and experience and were willing to drill the first well.

The initial offshore prospect was spudded May 5, 1950, in 20 feet of water. It reached a depth of 10,168 feet—acquired a bad case of stuck drill pipe—and was abandoned as a dry hole.

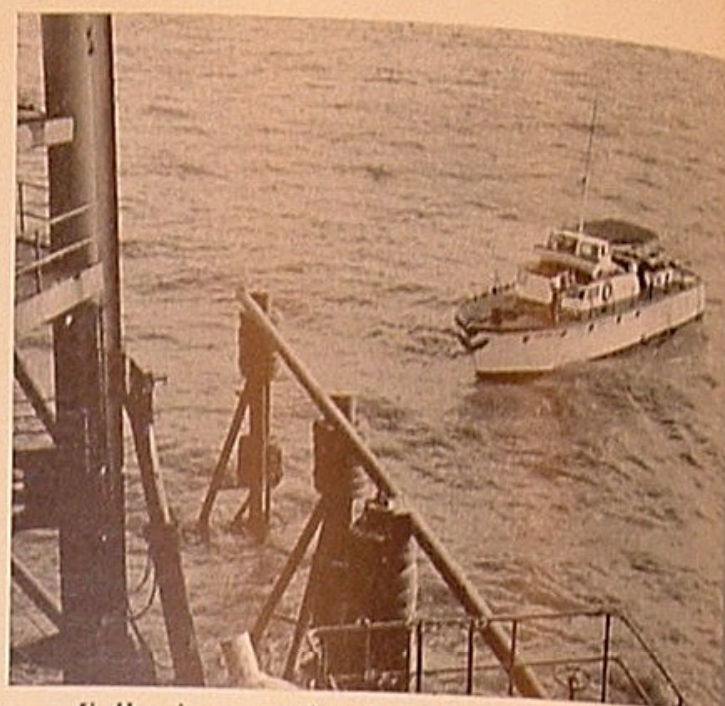
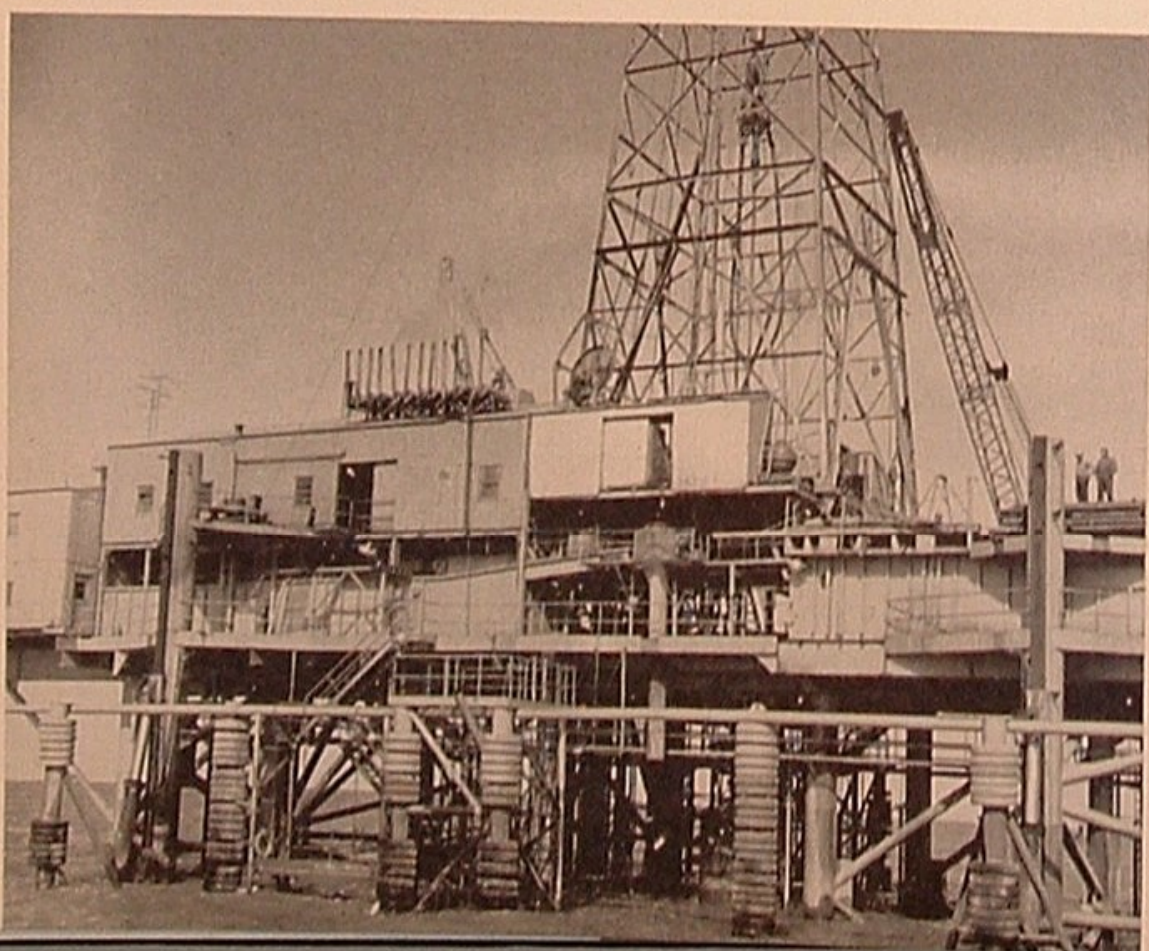
For the next five or six years, offshore development failed to develop. A ruling by the United States Supreme Court gave most of these offshore bottoms to the Federal government. It was not until Congress passed the Outer Continental Shelf Lands Act that Union-Kermac had their leases reinstated with the State of Louisiana.

Union Oil Company's amphibious "Mallard" is entrusted to Pilot Dan Mitchell, right, and Co-pilot Jean LeBlanc.





Above, "A drilling derrick in the Main Pass area of Breton Sound reaches from pilings driven deep into the ocean floor to a rig as tall as Home Office in Los Angeles." Below, "Outer legs of the platform are ringed with old automobile tires to keep boats from being staved in."



Following a circuitous course through Breton Sound shallows, the launch brings you and some emergency supplies to the sea-going platform.



The offshore reception committee includes, from left, W. A. McGallion, G. E. Schnexnaide, "Tool Pusher" Johnny D. Rainwater and J. D. Greer.



"In the spotless galley two cooks are conspiring to outdo their rival chefs in the French Quarter of New Orleans."

Three 6,000-foot core tests drilled in 1954 helped further to evaluate the leases. Finally on July 1, 1955, a deep test was spudded, No. 1-A State Lease 1268, on Block 47. It was completed as a discovery well, yielding 187 barrels per day of high-gravity oil from three sands between depths of 7,900 and 8,300 feet.

Three development wells spudded in July, 1955, and in March and May, 1956, have also encountered yields of oil, gas or rich distillate. The fact that no dry holes have been drilled during this development program indicates the likely presence here of important large-area petroleum reserves.

By now Pilot Mitchell has spotted a familiar launch working through the waters of Breton Sound. He circles the craft to attract attention, then sets the "Mallard" down in water sheltered by a narrow crescent-shaped island. Within 10 minutes you follow some emergency supplies aboard the launch and again put to sea.

The boat takes a circuitous course toward its objective. For, though there's a wide expanse of roily water on every side, much of it barely conceals sandbars and the Mississippi's growing deposits of silt. Carefully the helmsman follows a stake-marked channel for two or three miles, then gives the crescent-shaped island a wide berth. It's Saturday afternoon, and he confesses having plans ashore for Saturday night.

In half an hour you begin to see a drilling derrick take form in the Main Pass area of Breton Sound. Appearing gossamer through the mist at first, it grows into a massive structure of steel, reaching from pilings driven deep into the ocean floor to a derrick as tall as Home Office in Los Angeles. The outer legs of the platform are ringed with old automobile tires to keep supply boats and barges from being staved in.

Tool Pusher Johnny Rainwater heads the reception

committee as you climb a stairway to this man-made island. Johnny is justifiably proud of his Kermac rig. He shows you the drilling floor, the pipe rack, the draw works, the mud tanks, and all else compactly installed here to conduct a drilling operation at sea. But like all good *tool pushers*, Johnny says nothing about the success of his well. You must wait to learn from sources ashore that it's a 10,000-footer and has just drilled through five productive gas sands.

Moving at Johnny's invitation through the offshore living quarters, you are surprised to find the accommodations equal to those of a modern tankship. Bedrooms are clean, spacious, comfortably furnished. In the spotless galley two cooks are conspiring to outdo their rival chefs in the French Quarter of New Orleans. In the recreation room, three off-duty drillers hardly hear you walk through; they're intently watching television. Johnny's invitation to spend the night on his oasis in the Gulf is tempting. But getting ashore next day might be a problem, so you decline.

New Orleans, next stop on the "Mallard's" itinerary, is a beautiful 30-minute flight from the Breton Sound drilling site. You arrive exactly at sunset—in time to have salt water washed out of the "Mallard's" feathers, grab a cab to the Company's apartment on Canal Street, and freshen up for what Mitchell and LeBlanc recommend as the best food in Louisiana.

Dinner's terrific. So is the price. Thriftily repentant of adopting such fare as a steady diet, you spent Sunday in the sanctuary of New Orleans' beautiful churches.

To see the marsh and continental shelf areas where so much oil activity is taking place stimulates an urge to meet more of the people who are pushing this work along. So early Monday morning you drop in at the Company's district offices in New Orleans.

In New Orleans, District Geologist C. M. Schwartz, right, and District Landman Wayne Hightower postponed a Monday morning conference to round up the staff for a picture. Their Southeast Louisiana District group includes

(standing) Sam Terry, Rodney Green, Bill Bolding, Alan Dupont, Anthony Shinn, C. M. Schwartz, Andy Jansky, George Pichel, Wayne Hightower; Terry O'Conner, Joyce Jones, Sandra McLaren, Barbara Friedman and A. T. Green.



The recently formed Southwest Louisiana District includes (clockwise from left) Ben Elms, Terry Schutt, S. E. Hughes, L. D. Collier, W. D. Long, C. W. Post, Barbara Segari, Marjorie Hoffman and District Geologist William W. Henry.



In headquarters of the Southeast Louisiana District you interrupt District Geologist C. M. Schwartz in conference with one of his lieutenants, Wayne Hightower. They're busy, of course, but not too busy to round up the office staff for a group photo.

In another office, District Geologist W. W. Henry is just getting his staff organized into the recently formed Southwest Louisiana District. "We're not as populous as the Southeast District," he apologizes, "but we're just as good looking. How about a picture?"

Immediately you begin to erase any preconceptions of the South being slow-moving. You get the feeling that these young Southerners are dynamic. They're on

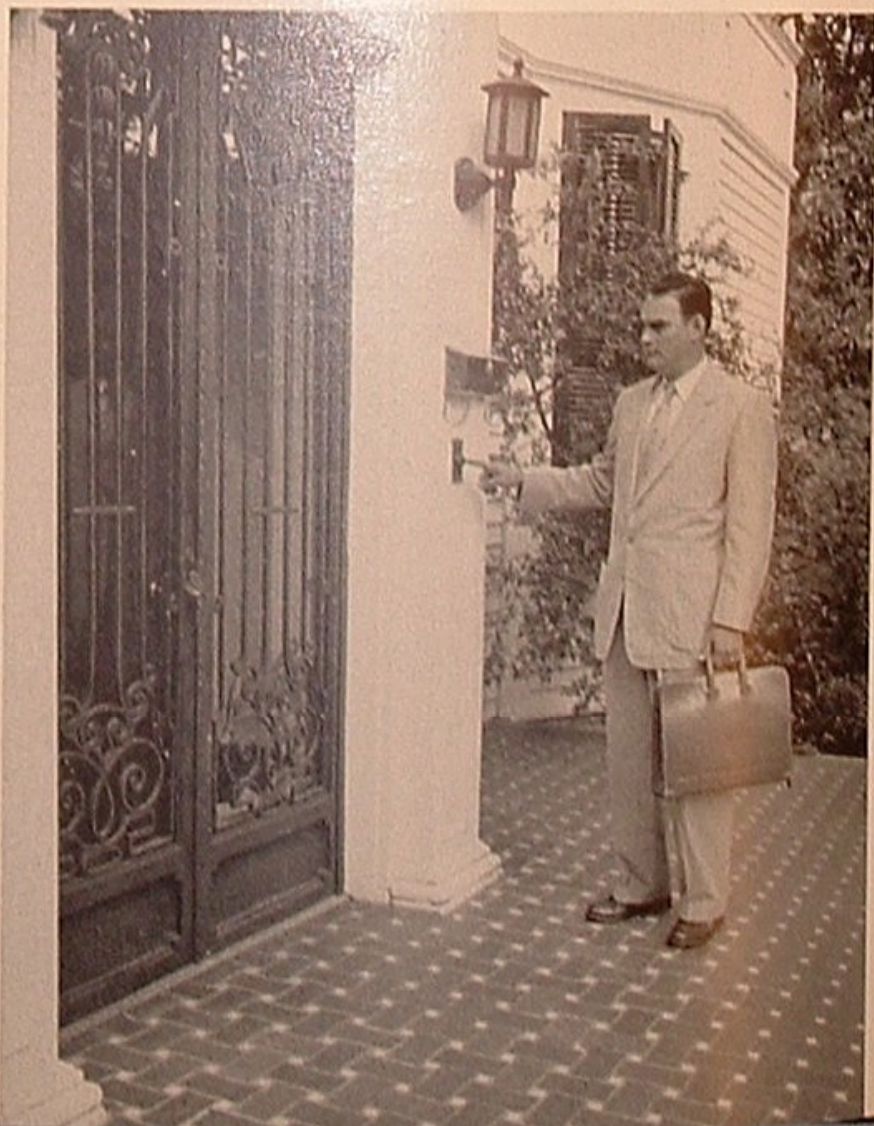
"Landman Bill Bolding invites you to ride out through interesting New Orleans while he gets a lease signed."

"Geologist George Pichel is enthusing about some electric well logs that have just reached his desk."



the ball, going places. Hardly does the introduction end before Geologist George Pichel is enthusing about some electric well logs that have just reached his desk. Landman Bill Bolding invites you to ride out through an interesting part of the city while he gets a lease signed. Scarcely are you back in the office before Geophysical Coordinator Ben Elms suggests, "If you'd like a good story on seismograph work in the marshes, come along with me up to Bayou des Allemands."

Yes, the oil game in the Gulf of Mexico is definitely major league. It's a fast game, too. And to keep up with it, young man, you'll have to be about as swift, versatile and serviceable as the "Mallard."



Making Knots at the Dock

**WHARF ADDITIONS AT LOS ANGELES REFINERY TERMINAL
REDUCE TANKSHIP CARGO HANDLING TIME BY ONE-HALF**

HAVING developed super-tankers that will carry a 350,000-barrel oil cargo across the ocean at 16 or 17 knots, the petroleum industry is turning its progressive energies toward port facilities. Some of the older wharves are proving too small for the *supers*. And it takes an impressive installation of tanks, lines and pumps to handle the 10 to 15 million gallons of oil oftentimes comprising a single shipment.

At Union Oil's Los Angeles Refinery Terminal, however, Pacific tankships can now *make knots at the dock*. Recently finished and placed in operation is a spacious concrete addition to the older wooden wharf. It will accommodate the largest tanker able to navigate Los An-

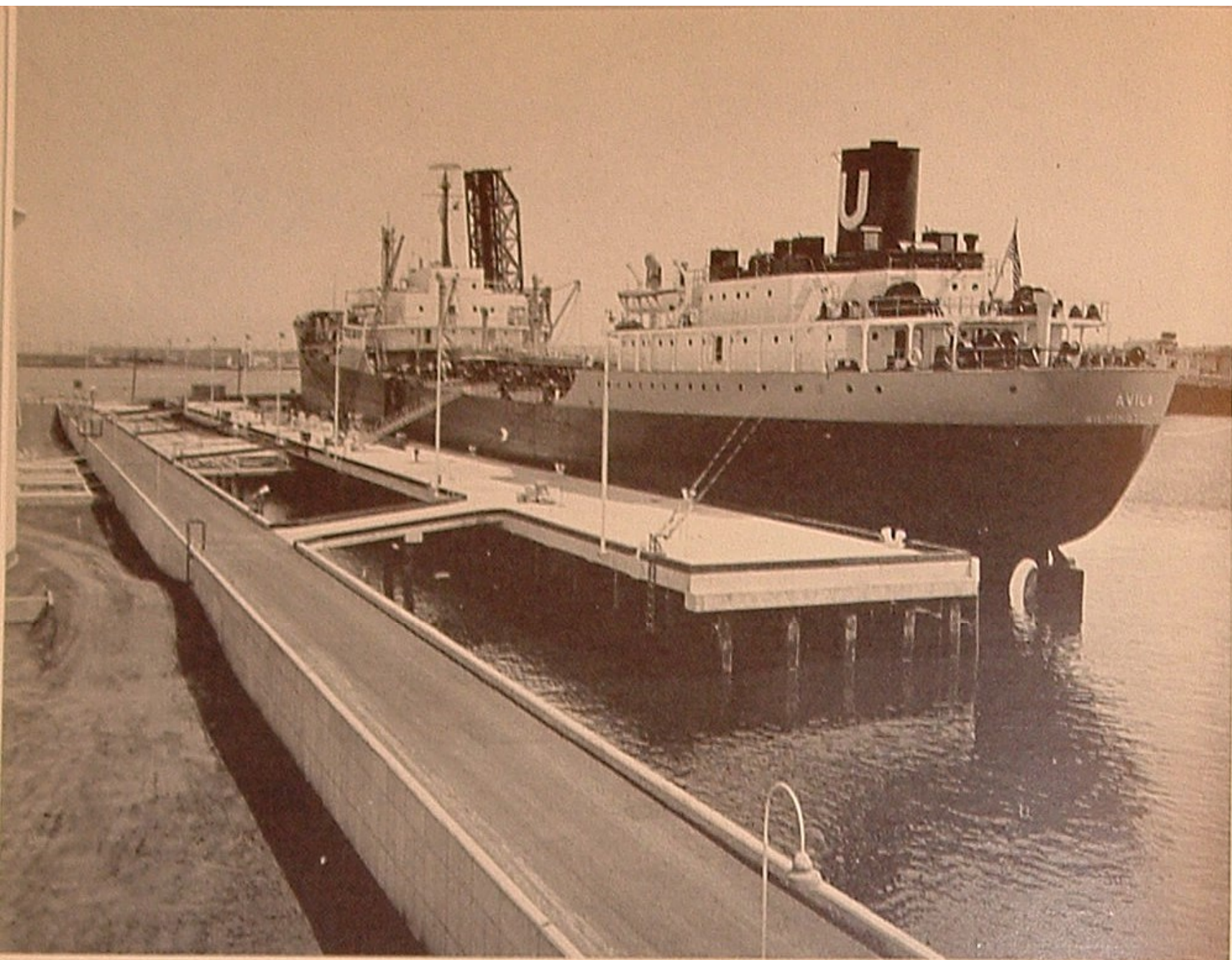
geles Harbor waters and can handle oil cargo in approximately half of the former time.

Through the new loading system, products can be pumped at rates as high as 35,000 barrels an hour. The former pumping rate was around 18,000 barrels an hour maximum. Moreover, with two tankships being served at a time, as many as 14 different commodities can be handled simultaneously.

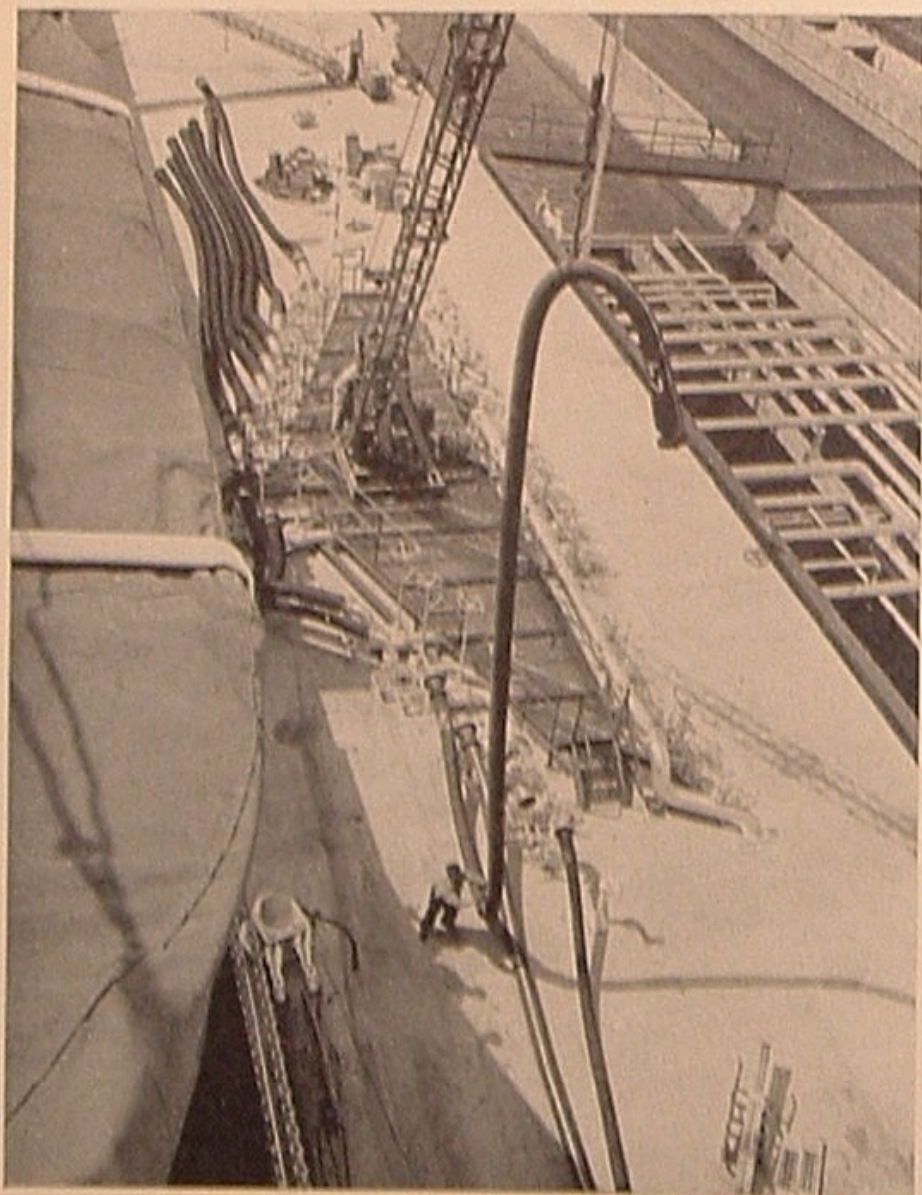
This means that a 200,000-barrel super-tanker's loading time is reduced about 18 hours. And our Company-operated tankers, such as the AVILA, are using about half their former time at this dock.

In half the former loading time, Union Oil's S.S. AVILA is taking cargo at Los Angeles Refinery Terminal's new wharf.



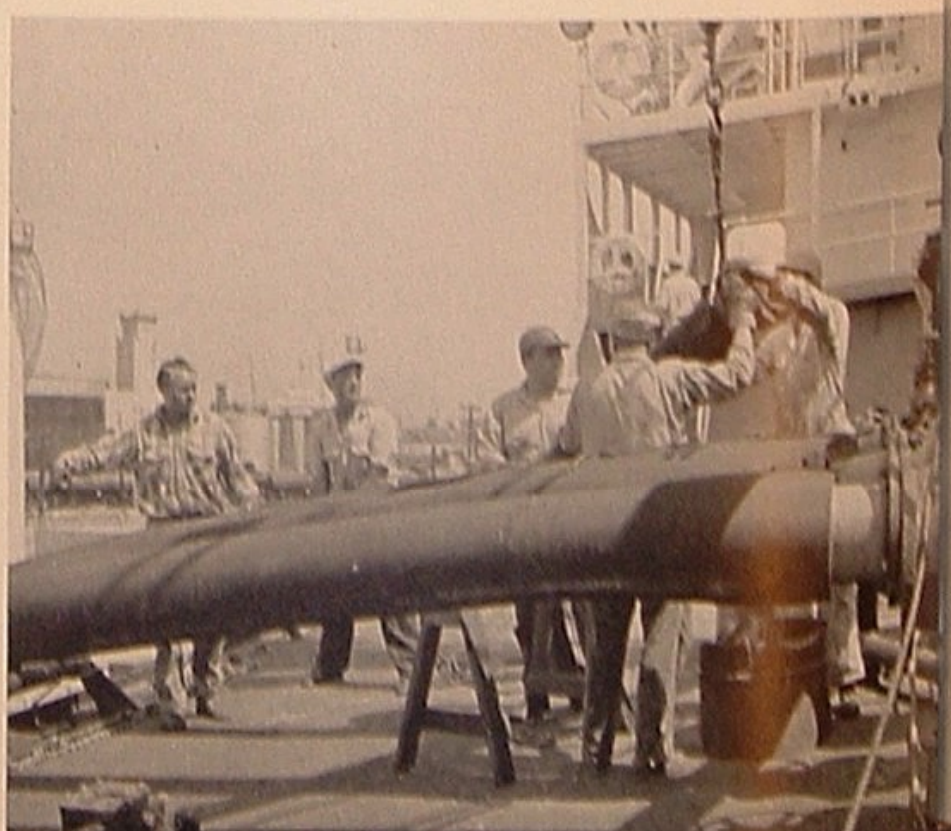


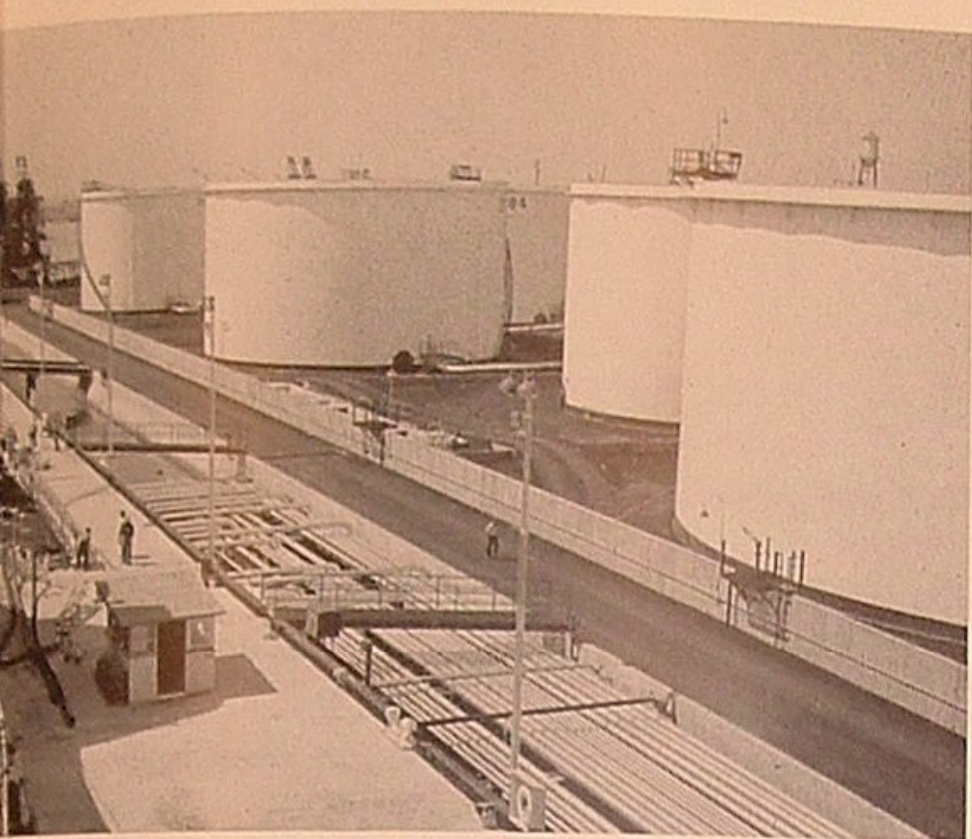
Above, the 600-foot wharf is part of a \$2,500,000 project that should redeem itself in tanker economies.



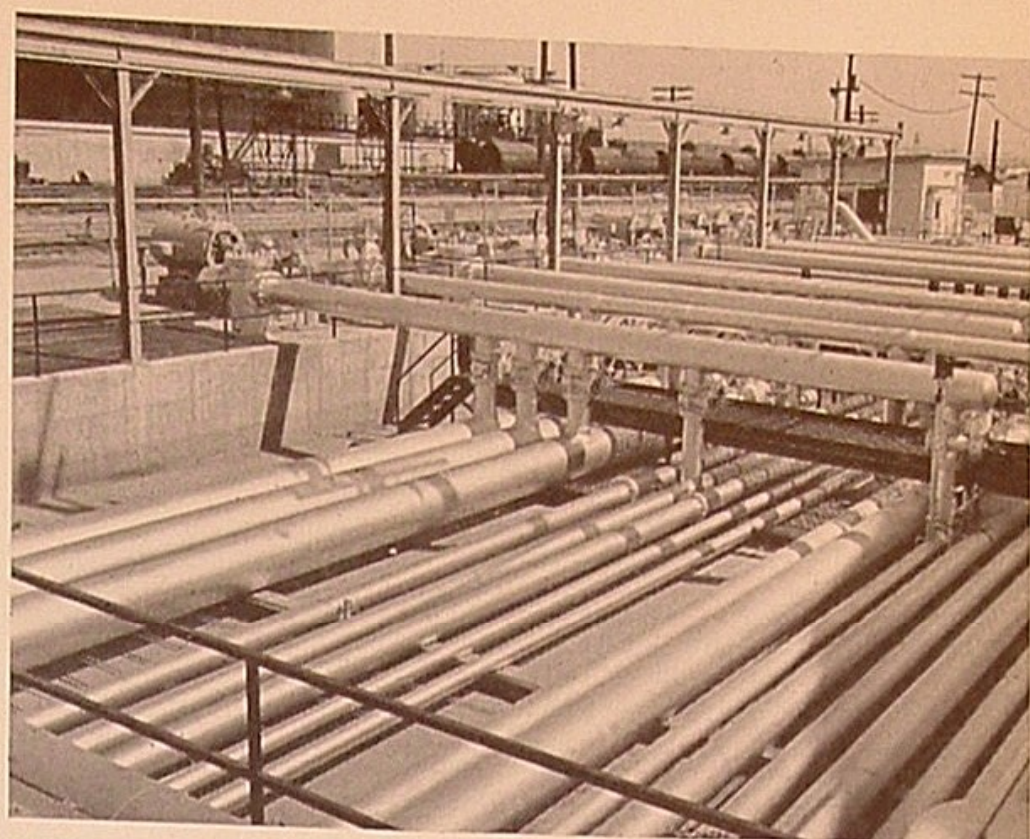
At left, a heavy cargo hose is being lifted by electric-hydraulic crane to begin loading of the ship's tanks.

Below, aided by the crane, the deck crew find their job of connecting hoses to the vessel made easier and safer.





Four hundred thousand barrels of added tankage for incoming and outgoing oils helps keep tankships moving.



Intricate manifolding of pipelines at the new wharf eliminates manual changes in lines, saves more time.

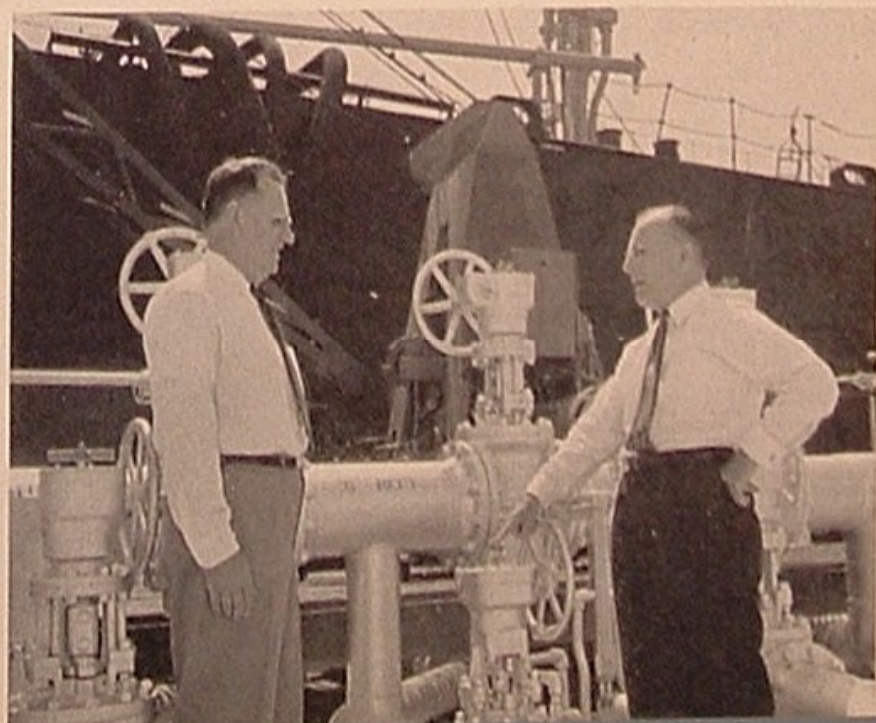
A great deal of the time-saving is attributed to the intricate manifolding of pipe lines. The lines are so interconnected as to permit the pumping of a commodity through any of various lines in its respective *black* or *white* products system. The former time-consuming installation of rings and blanks in pipe lines has been eliminated. Manifolding also has minimized the changing of loading hoses.

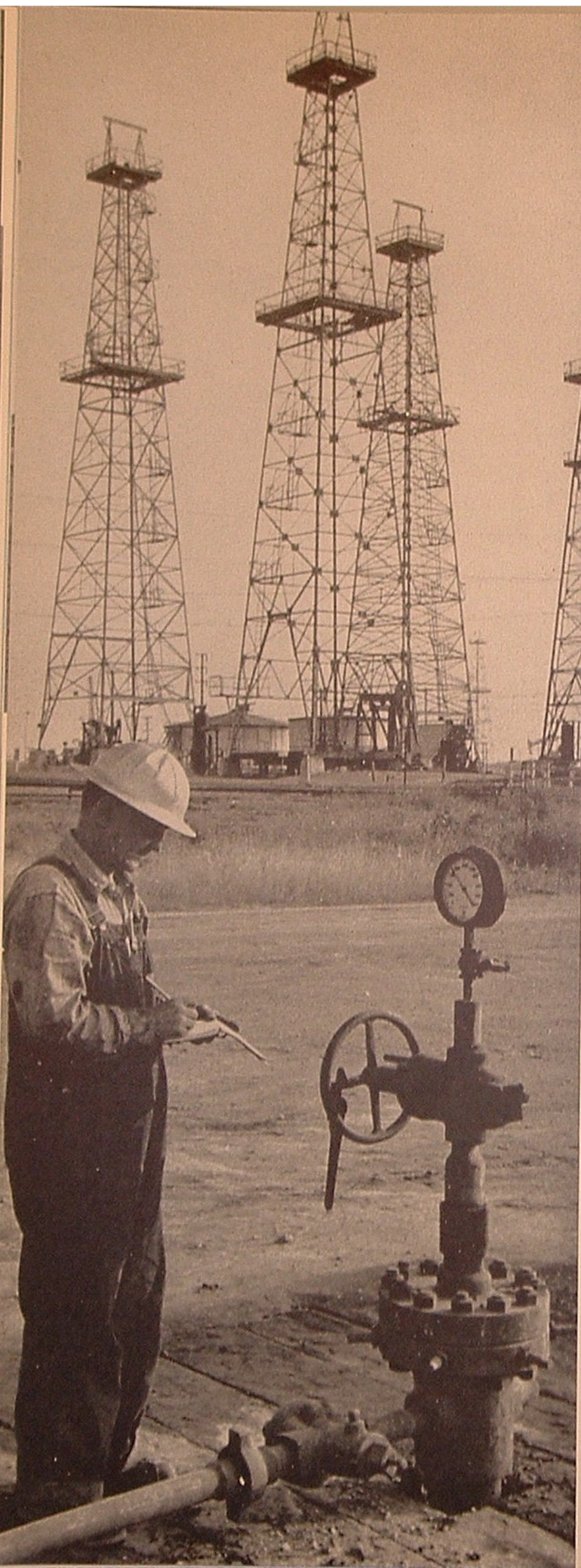
Increased tankage too is a helpful factor. Eight new storage tanks, all equipped with floating roofs, have increased the terminal's storage capacity from 400,000 to 800,000 barrels. This facilitates both the receipt of cargoes and the assembly of shipments at the wharf prior to a vessel's arrival.

Watching the AVILA take on her first refined cargo at new Berth 149 emphasized the meaning of this change: Loading hoses, lifted by an electric-hydraulic crane, were aboard and bolted minutes after the ship was moored. Valves opened and pumps went to work immediately. Captains Kostowal and Povey, noting the ship's abbreviated port time, smiled at each other as if to say "What's next?" And a young seaman, hurrying ashore with his buddy, speculated "Maybe we'll have time to see a movie—if it ain't a double-header."



While Pierre Beaulieu and Jim Hill try out the wharf's excellent fire-fighting equipment, above, Captain Henry J. Kostowal of the AVILA and Marine Superintendent D. L. Povey, below, discuss the abbreviated loading schedule.





Why

We Are 100%

BUT SOLIDLY OPPOSED TO PROPOSITION 4 ON THE CALIFORNIA BALLOT

ON TUESDAY, November 6, most of us will go to the polls to indicate our preference for people and a party to guide our local, state and federal governments for some years to come. Our decisions will be based primarily on principles and policies which the candidates have endorsed.

Besides the personalities to be elected, there will be many state and local issues to be resolved. We want to talk about one of these—Proposition 4 on the California ballot, an initiative measure relating to our business, the oil business.

Proposition 4 is named "The Oil and Gas Conservation Act" and presumably is designed to prevent waste of these natural resources. The measure was sponsored and is supported by six of the major oil companies operating in this state. It is opposed by hundreds of independent oil companies, independent oil men, landowners, contractors, suppliers and specialists serving the industry and by an increasing number of citizens interested in good government.

Union Oil Company is among those opposed to this measure. We are opposed on the basis of the principles and policies which are involved—principles and policies which we believe are inimical to the best interests of the people of our state.

"But how can anyone be opposed to conservation?" you ask.

The answer, of course, is that we are *not* opposed to conservation—true conservation. Merely calling a bill a conservation bill no more makes it a conservation bill than wrapping a wolf in sheep's clothing makes him a sheep.

Let us tell you about the principles and policies involved upon which we make our stand.

WATER FLOODING, a foremost oil conservation practice, is greatly increasing yields of oil to owners of the Dominguez Field near Los Angeles. The injection well, foreground, operated by Union Oiler Paul Duffield, flushes crude toward the producing wells of three oil companies.

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Are 100% For Conservation

In essence, this proposed law implies that, first, oil has been and is being wasted in California through past and present production practices;

Second, that there is *no* conservation law in California; and

Third, that government intervention and control is the only solution.

To answer these unfounded statements—in the first place, oil has not been and is not being wasted in California.

In the second place, California has a conservation law—the first one in the country and the best.

And in the third place, more government is never the answer to a problem. And these are imaginary problems. The role of government should be to administer—wisely and judiciously. This measure would set up government with fearsome and loathsome authoritarian controls. It would create a centralization of power repugnant to our American traditions.

Let's take up one by one the claims of the bill's supporters and nail them for the untruths they contain.

First, that oil has been and is being wasted in California through past and present production practices.

OIL IS NOT BEING WASTED

As to the past, the truth is that no vast quantities of oil have been wasted. Certainly, in the late 20's and early 30's we produced our oil fields in a manner which in the light of present knowledge might not be considered good practice. But that is similar to condemning use of the horse and buggy because we should have known the automobile was coming.

And, as a matter of fact, *no* oil was wasted in the sense that it was either destroyed or irretrievably lost. What was produced was used. What was not produced is still in the ground awaiting secondary recovery methods to bring it forth.

As to the present, California operators are drilling and producing our oil reserves in as efficient a manner as any group of operators anywhere in the world and we are far ahead of most in the application of new technological advances. To our knowledge there is not a single new idea in any laboratory for a better production practice, which is not already being used either commercially or on an experimental basis in California today.

And these things are being done voluntarily.

California oil operators are very conscious of the possibilities of recovering more oil from known reservoirs. It is to their economic benefit to do so. The record shows that not only are they conscious but active in various kinds of secondary recovery methods, usually involving the use of water-flooding or gas repressuring to force more oil to the surface.

There are at least 29 pools in the state where water drive is being used and another dozen where gas is being injected as a production stimulant. The largest cooperative water-flooding in the state is being conducted in the Dominguez oil field by our company, Shell Oil Company, and Dominguez Oil Fields Company. As a result of this water injection program, which was begun on July 1, 1954, the current net oil production in the affected area is approximately 2800 barrels daily as compared with about 650 barrels a day that the normal production would have been at this time had not this voluntary conservation program been instituted.

Within the past few weeks 11 oil companies, including six supporters of the proposed "conservation" legislation, announced that they were voluntarily cooperating in a new kind of secondary recovery project—a thermal recovery experiment in a Tulare County field. In this experiment a depleted pool is being ignited under ground in an effort to reduce the oil's viscosity through controlled heat. The oil is so heavy as to be considered unrecoverable by any other means.

Many oil fields are operated as a unit by a single producer, even though a number of companies may own wells there. The operator must produce the field efficiently, so that it will yield the maximum amount of oil over its life.

Working together voluntarily under the sanction of existing laws, California operators lead the nation in unit production. At present there are in the state 12 fully unitized fields, 7 partially unitized fields and 15 fields under operating agreements or produced by one operator whose total output is 239,577 barrels of oil per day, approximately 25% of the entire state's daily production.

No other state—Texas, Louisiana, Oklahoma, any of them—in spite of so-called conservation laws, can approach this percentage of unitized production and only Texas, with 2½ times our total production, can equal it in actual barrels per day.

For this record of successful, voluntary cooperation, the proposed act would substitute compulsion and control. It would make mandatory unitization of any field or pool where lessees and land owners representing 75% of the surface area would agree. This democratic-sounding proposal is a misleading fraud. Here's why.

There are 73 recognized oil fields in California. In 52 of these fields, four companies or less have that $\frac{3}{4}$ interest. In the majority of the important fields, a combination of a few of the major companies would constitute the necessary 75%. The minority—even though it may include more than 50% of the operators—would be bound by that agreement forced upon them by the major interests.

We maintain that unless a unit plan can be sold to the operators on its own merits something is wrong with it. To force an operator into such a unit against his will is nothing but confiscation of property.

Our company favors unit operation. It is participating in a majority of the existing unit operations in the state and operates the most successful of them. It opposes compulsory unitization and the monopoly of power which it can create.

CALIFORNIA DOES HAVE A CONSERVATION LAW

A second major point in the platform of the proponents of the legislation is that there is no conservation law in California.

The truth is that California does have a conservation law and as a matter of fact it was the first state in the Union to enact such a law.

In 1915 the California legislature adopted our first oil and gas laws and for the past 41 years we have had regulations for protection of fresh water strata, blowout prevention, testing, permits, bonds, etc., and provisions for policing and enforcement. These are regulations which are included in the proposed new "conservation" law as though they did not already exist and were not already in force in our state.

Some years ago these oil and gas laws were amended in the light of new technology to prohibit the blowing of gas to the air, to permit the formation of cooperative or unit agreements, to prohibit underground waste, and to provide for enforcement of these regulations.

That the laws have been successful is shown by the fact that there has been less gas wasted—blown to the air—per day during the past 10 years in the entire state of California than in many individual pools in the states of Texas, New Mexico and Louisiana.

Recent litigation has shown, too, that the sections relating to underground waste have been very effective.

In addition, our industry makes good use of the Con-

servation Committee of California Oil Producers, a fact-finding and reporting group in matters involving good production practices. The Committee is composed of a cross-section of the best engineering talent in the industry. It is drawn from large and small operators and consists of men acquainted with both theoretical and practical problems in the field. It would be well nigh impossible for a state regulatory body or even a large oil company to match this talent.

So successful has the work of this voluntary Committee been that last year the state legislature took official cognizance of its existence and gave its findings their legislative blessing.

The combination of statutory authority of the State Division of Oil and Gas, which administers our conservation law, and the Conservation Committee, which provides technical cross-fertilization of the best production techniques, provides the people of California with everything needed to properly safeguard our present and future oil production. These regulations can be amended from time to time by appropriate legislative action so that they are consistent with reality and changing technology.

This is an important point.

Sponsors of the measure bypassed the regular legislative procedures to promote this Act. They resorted to

Below, a natural gas-injection program at Coalinga Nose Field is recognized as one of the most successful unitized



initiative action which in California would freeze into law the provisions of the measure and give it an effect similar to a constitutional amendment which only can be changed by further initiative action. This means that should this Act pass we would be harnessing ourselves to conduct our future business on the basis of our present knowledge. This is a self-evidently ridiculous obstacle to the progress of our industry and our state.

MORE GOVERNMENT IS NOT THE ANSWER

There is, of course, a very basic fundamental principle which underlies this entire controversy.

That is, should California's oil resources be developed under our present comprehensive conservation laws which protect the state and its people while capitalizing on the vigor of private enterprise and voluntary individual initiative, or should we substitute for this traditional American concept bureaucratic government control and the very real danger of monopoly of power.

The proposed law sets up a commission of three men appointed by the governor with discretionary authority in almost all things pertaining to drilling, producing and well spacing.

Its power is limited almost entirely by an ambiguous provision for preventing "waste." And "waste" is defined in terms so indefinite that no two competent en-

operations in California. Here Union Oil, the operator, has joined with several companies in voluntary conservation.



gineers, let alone operators, could agree on their application. Yet these are the terms by which it is proposed to define property rights involving millions of dollars, with the decision to be made by the commission.

The use of such terms by parties to a voluntary private agreement, such as setting up a unit or an operating agreement, is one thing, but it is another matter to use them in a constitutional measure to freeze property rights.

There are some other key phrases in this Act.

In the guise of a conservation measure, the bill "prohibits," "provides," "regulates," "requires," "prevents," and "establishes" just about everything that is done in the development and production of an oil field.

All of these words have the connotation of force, of compulsion, of regulation. If this isn't control, then what is?

It has been intimated that through passage of this measure the state stands to gain billions of barrels of oil and billions of dollars in revenue. In light of this prediction, it is interesting to note that the California legislative counsel in Sacramento, in a written opinion, has declared that the Conservation Act, if approved by the voters, could be used to curtail production from California's state-owned tidelands. Such curtailment, of course, would mean lessened revenue for the state.

The staff of the State Lands Commission also has expressed opposition to Proposition 4, contending that jurisdiction of the Lands Commission over state oil and gas leases could be nullified and operating requirements and leases issued in the past, through competitive public bidding, could be cancelled without the consent of the Lands Commission, should the measure pass.

Certainly the actions of these two state agencies do not indicate their belief that the so-called conservation bill is in the best interests of the people of California.

In 31 small-type pages of legalistic phrasing, the proponents of this measure have put together a bill concentrating in the hands of a few so much power as to create an eventual monopoly.

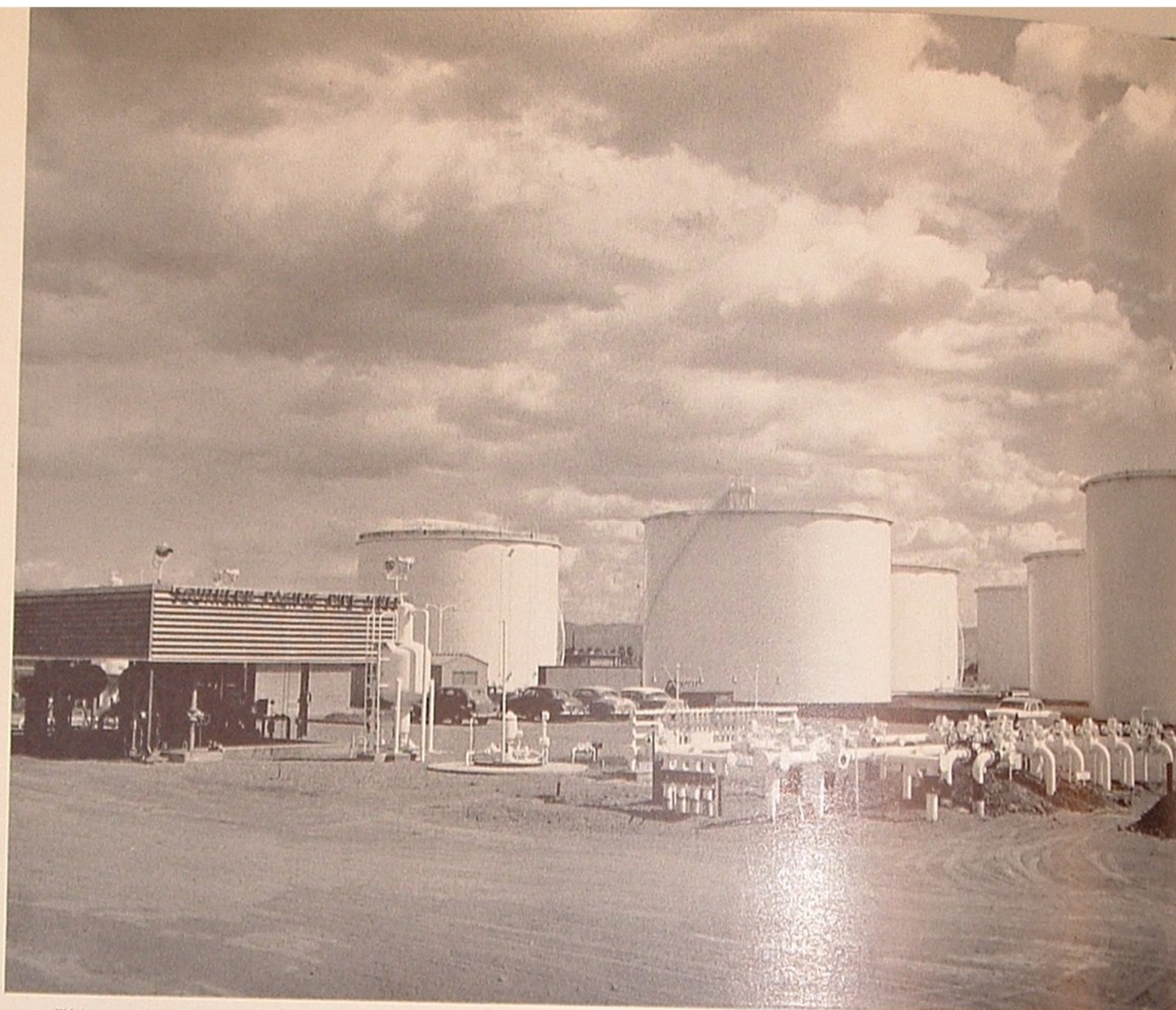
This is a bill prepared without consultation with independent oil producers, land owners and royalty owners directly affected by its terms.

This is a bill prepared without benefit of open legislative hearings and exempt from the scrutiny of our elected representatives in Sacramento.

This is a bill to control oil production in California.

This is a bill which in no sense is in the best interests of the people of our state.

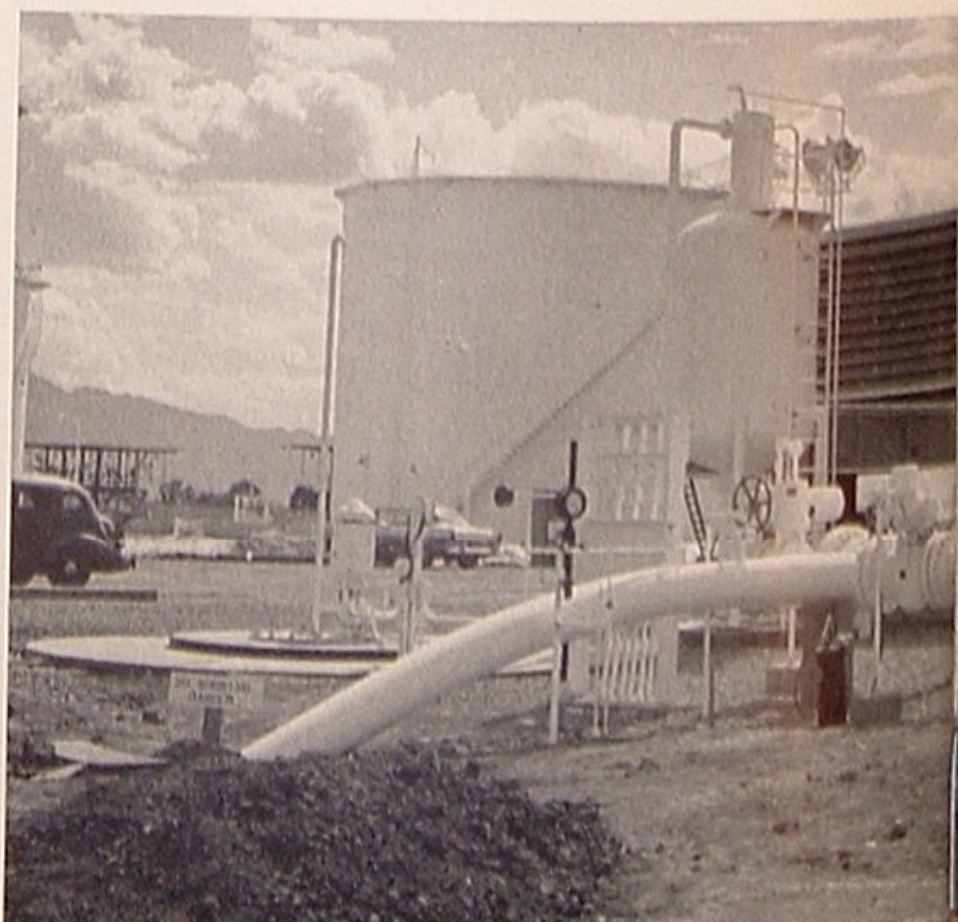
As disciples of true, voluntary conservation practices and as opponents of unwarranted, restrictive government intervention and control, we oppose this measure and ask that you do likewise.



This is the Phoenix, Arizona terminus of Southern Pacific Pipe Lines, first products line operated by a railroad.

Starting at Watson, a suburb of Los Angeles, the line dips underground (below) and proceeds 417 miles mostly

via the Southern Pacific right-of-way. It emerges at Phoenix beside another 426-mile line from El Paso, Texas.



SOUTHERN PACIFIC'S NEW 417-MILE PIPELINE PUTS

Gasoline on Tap in Arizona



Union Oil's Terminal Superintendent J. Gil Brown, left, checks bills of lading with Southern Pacific's Chief Operator John G. Sparks as first "76" shipment reaches Phoenix.

TODAY, Union Oil marketing people in Phoenix, Arizona, merely turn on the tap to replenish their supplies of diesel fuel and gasolines. A pipeline carries these products 417 miles from Watson, a suburb of Los Angeles, to Southern Pacific's new tank farm just outside the city limits of Phoenix. From Union Oil storage tanks at the tank farm, the products continue another five miles via Company pipeline to our Phoenix Terminal.

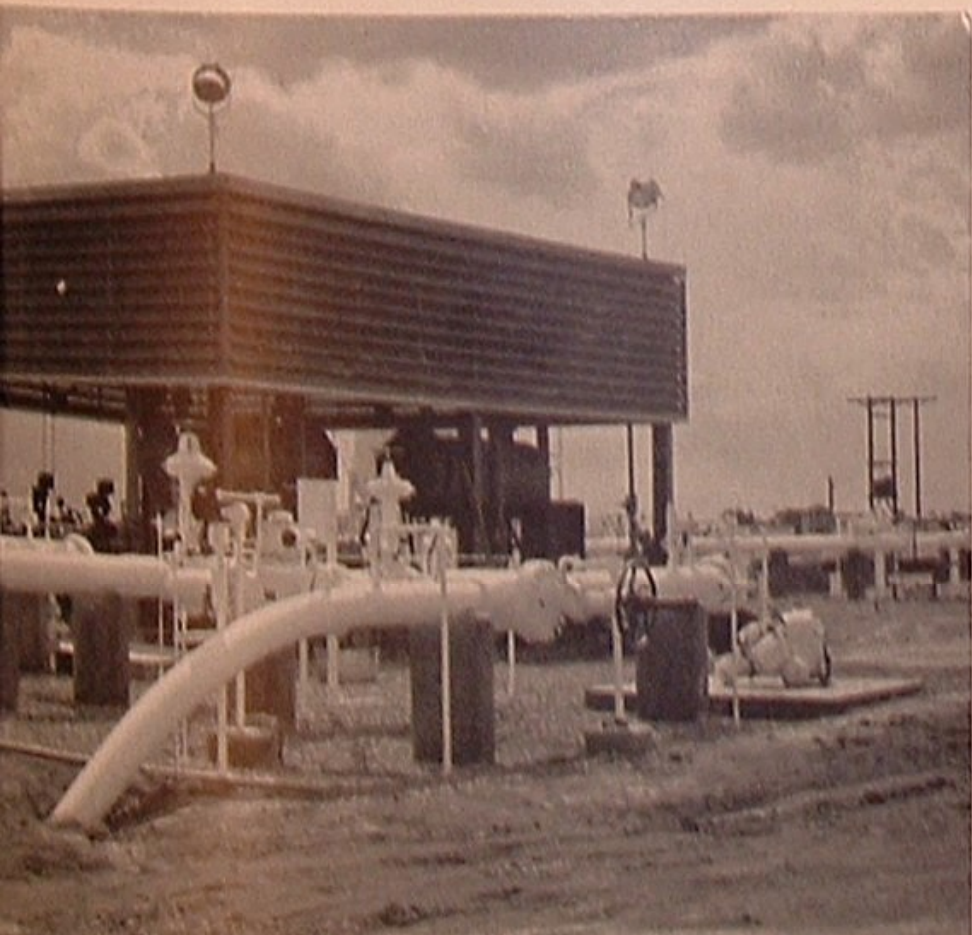
It all began three years ago when oil industry people, including Union Oil representatives, first met to discuss a joint-venture products pipeline from California to Arizona. Nearly everyone agreed that such an installation would reduce high transportation costs. But there were a few skeptics. Like many another cooperative venture, this one began to drag its feet.

Word of the proposal meanwhile reached D. J. Russell, president of the Southern Pacific Company. As he heard others discuss the advantages of pipeline transportation over tankcars and tanktrucks, Mr. Russell latched on to a particularly good idea. His railroad, he reasoned, already held a right-of-way from Los Angeles to Phoenix. If the products pipeline is too much for the individual oil company, why shouldn't the railroad build and operate one as a common carrier for everybody? "If we're going to lose business," he is quoted as saying, "let's lose it to ourselves."

So, with oil industry endorsement, the Southern Pacific pipeline was built. It is the world's first products pipeline installed and operated by a railroad. Not only does it link Phoenix with several of the major Los Angeles refineries, but an extension of smaller line also connects Phoenix with refineries in El Paso, Texas, 426 miles to the east.

The glistening new products tank farm in Arizona offers two types of service. Oil companies using the pipeline may draw their products from railroad-owned storage tanks; or they may obtain ground and build their own storage facilities adjacent to the farm.

Union oil has chosen to erect and operate its own products storage. On a plot of ground large enough for any foreseeable expansion, we have constructed four





With "gasoline on tap" and beautiful new offices (left) to accommodate marketing personnel, our Phoenix Terminal and Arizona District are ready for the future. Below, Mollie Huff and Helen Skorpice are the "Girls Club" here.



tanks. These have a total capacity of 82,000 barrels. In addition, our Phoenix Terminal can accommodate 13,000 barrels of bulk product.

Although the tank farm and our terminal are five miles apart, no manpower is required at the farm during transfers of stock. By remote control, plantmen in Phoenix manipulate all valves and pumps at both locations. Gasolines and diesel fuel are literally on tap.

Another important service of the Southern Pacific pipeline is to supply these same products to a new Union Oil terminal at Colton, California. As shipments of Union Diesol and gasolines pass through the nearby line, our Colton plantmen open the valves and fill their local storage. In fact, a larger volume of Union products stops at Colton than continues on to Arizona.

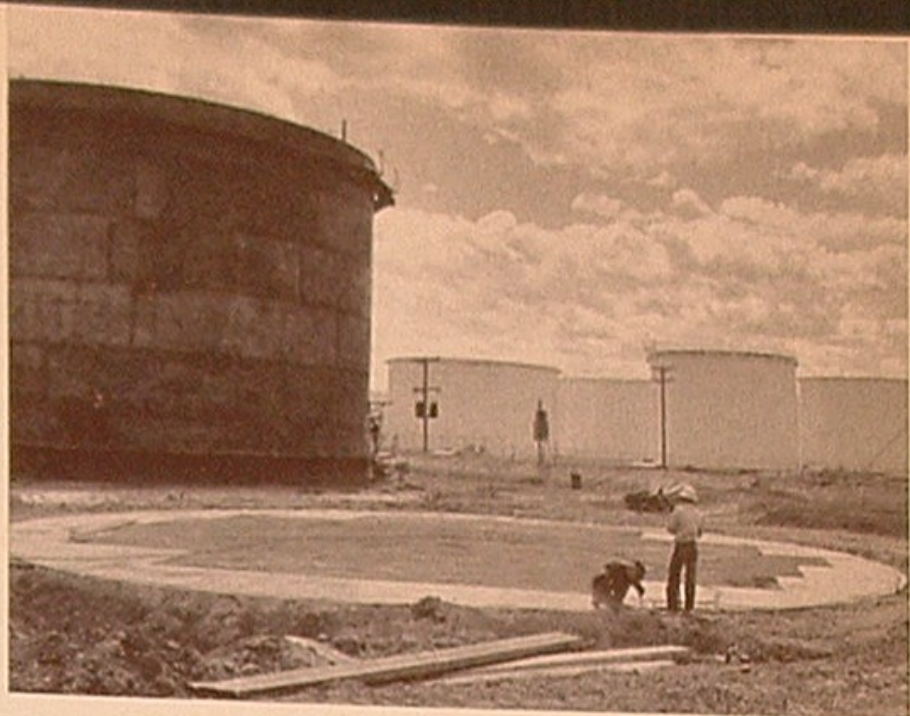
Here are some statistical facts regarding the new pipeline installation:

The line, now consisting of a single artery, is 16-inch from Watson to Colton, 12-inch from Colton to Phoenix, and 8-inch from Phoenix to El Paso. A pump station at Watson and a booster station at Colton provide all the pumping energy needed between Los Angeles and Phoenix.

The minimum shipment accepted by Southern Pacific is 15,000 barrels, with the average shipment to date amounting to about 35,000 barrels. Since the Los Angeles-Phoenix pipe holds a total of 346,500 barrels, this means that some 10 or more shipments occupy the line at any given time. Products are pumped at the rate of about two miles an hour or 35,000 barrels per day.



Among Union Oil people to initiate the new pipeline service at Phoenix were (above, from left) District Sales Manager C. E. Denton (now reassigned to New York), Retail Representatives Ray Armstrong, D. E. Garber, W. T. Sherar, and Industrial Sales Engineer E. G. McLaughlin; (at right) Resident Manager C. C. Arnold, Wholesale Salesmen H. J. Collins, P. R. Sybrant, R. C. Davidson; (lower right) Leonard Herman, C. J. Koldoff, Delbert Area, Bill T. Lee, George E. Wolfe and Bernard J. Averbreck, who operate the terminal and its trucks. Photo upper right shows new Union Oil storage under construction at Phoenix.



No serious mixing problem occurs when one gasoline follows another through the line. In-transit mixture affects no more than 400 barrels, all of which goes into storage with the lower quality fuel. However, to follow gasoline with diesel fuel requires extra precautions. Sometimes a *buffer* such as stove oil is used. In any case, up to 400 barrels of the mixed commodities is piped into separate storage and either returned to the refinery or sold to someone who has use for a fuel of such specifications.

Besides having gasoline on tap, our Union Oil people in Phoenix have new office accommodations that are unsurpassed. In the accompanying pictures we proudly introduce most of this marketing group—ready to embark upon another era of growth in Arizona.



Tankship

By The Sixth Graders of Central School



The SANTA MARIA, above, was adopted by sixth graders, right, of Central School in Glencoe, Illinois, who here-with tell of their year's adventure before the mast.

Photos from left:

To Principal John Sternig, the students introduce their ship and its captain. Cards received from the Petermans in Europe help in the study of geography. Some of the boys are thinking about visiting the ship and Yosemite in California. Teacher Margaret Carlson pleases two of her A-B-Seamen with "A" grades. Square dancing is a most popular indoor pastime. But for real sport, there's nothing like recess and baseball.



Ship Sails The A-B-Seas

THERE are 28 children in Miss Carlson's 6th grade class at Central School, Glencoe, Illinois. There are 13 girls and 15 boys. Ages vary from 11 to 12, but most of the class is 12 years old. Some of the children have very interesting hobbies.

Two years ago, Miss Carlson heard of the "Adopt-A-Ship" plan through the Women's Auxiliary of the American Merchant Marine Association. She decided to have her class adopt a ship. The ship assigned to the group was the S. S. SANTA MARIA, newest oil tanker of the Union Oil Company of California. The class enjoyed the experience so much that Miss Carlson asked for the SANTA MARIA again for the school year of 1955-56.

High point of this year's experience was a visit from the ship's captain, William H. Peterman, and Mrs. Peterman, which occurred when the Petermans were on their way to a European vacation.

Adopting a ship meant that the children would write letters to the captain, telling about their activities and asking various questions about him, his ship, his crew and their trips.

The children have enjoyed the letters they received from Captain Peterman. They also enjoyed the other things he sent, such as Hawaiian flowers (orchids, tea leaves, anthurium, ginger, bird of paradise), a film strip of an oil tanker, a large picture of the ship, and a picture

of the captain. All of these things are displayed and used to increase the children's knowledge of and appreciation for the Merchant Marine.

This sixth grade studies many subjects in school, such as reading, arithmetic and spelling. In English the area of concentration is on punctuation, word usage and parts of speech. In science the natural resources of the United States are studied, as well as other things, such as astronomy, the human body, animals, magnetism and electricity, atomic energy and plants.

Displays on the bulletin boards include pictures of the various states, maps made by the children, science materials, newspaper articles, spelling and arithmetic papers, written reports in the science and social studies area. These help to make the room an interesting place in which to work. Cards from Captain Peterman and Mrs. Peterman are also put on the map so that the children are kept informed of their progress in Europe. In this way the children learn quite a bit of world geography and keep up with history which is in the making.

(Editors' Note: Besides Captain Peterman, Captain Henry J. Kostowal of the AVILA, Captain Kurt O. Meyer of the PAUL M. GREGG, Captain Willie A. Badden of the LOMPOC, and other members of our Marine Department have contributed splendidly to the Adopt-A-Ship program.)



Is The Constitution Already Gone?

(The following answer to this vital question was given by Editor Dan Smoot of Dallas, Texas, guest speaker heard over "The Manion Forum of Opinion" broadcast of June 24, 1956. For re-publication courtesies, ON TOUR is indebted to Dean Clarence E. Manion and the Mutual Broadcasting System.)

THANK YOU, Dean Manion, for allowing me to speak on the Manion Forum of Opinion—which I regard as the single greatest force for freedom in the United States today.

An author of books on the United States Constitution tells me that it is wrong to criticize the Supreme Court merely because the Court changes the meaning of the Constitution. He argues that if the new meanings which the Court gives the Constitution promote the public welfare, then the Court's decisions are good and constitutional. If, on the other hand, the Court's decision is harmful to the public welfare, then the Court's dictum is bad and unconstitutional.

Actually, the Supreme Court is supposed to review legislation brought before it—not to determine whether the legislation is good or bad, but whether it conforms with the meaning of the Constitution.

Let us presume that Congress passes a law which everybody in the United States thinks is good. Every person in the Nation believes this law would promote the public welfare. If in passing the law, however, Congress assumed powers which the Constitution does not specifically give to Congress, the law is unconstitutional. And it is the duty of the Court to declare it so, even if the Court thinks the Constitution is inadequate for not permitting such a law.

Does this mean that the people of the United States are inescapably bound by an 18th Century Constitution, which may, in some particular, become inadequate to meet the new needs of a new age? Of course not. The Constitution makes provision for its own alteration.

George Washington discussed this question in his Farewell Address. The Father of our Country said, "If in the opinion of the people the distribution or modification of the constitutional powers be in any particular wrong, let it be corrected by an amendment in the way which the Constitution designates. But let there be no change by usurpation; for, though this, in one instance, may be the instrument of good, it is the customary weapon by which free governments are destroyed."

The Constitution is supposed to be the contract under which the Federal Government operates. We, the people, pay the salaries of all who work in all branches of the Federal Government. Their operations are supposed to be controlled by terms of our contract with them, that is, by our Constitution.

If you contracted with someone to build a house for you, wouldn't it be crazy to permit him to change the terms of that contract without consulting you? It may very well be that your contractor thinks you have a stupidly designed house. He may beg you to change it, but in the end he is obligated to build the house according to the terms of your contract with him.

What would be the end of permitting your contractor to change your contract as he saw fit? At the very worst, you would have to pay a great deal of money for a house you didn't want.

What would be the end result of our permitting the Supreme Court to change our basic contract of government as the nine political Justices see fit? The long range consequence will be the loss of all liberty, and of all private property for every human being in the United States.

Consider the Supreme Court's decision in the school segregation cases. Without regard to the question of whether segregation is good or bad, constitutional authorities know that the Supreme Court's decision was wrong, because the Court usurped power which the Constitution does not give to any branch of the Federal Government.

If the people of the United States want the Federal Government to outlaw racial segregation in tax supported institutions, then the people should formally amend their Constitution, in order to give the government the legal power to do so.

But no agents of the Federal Government have a right to change the Constitution even if they think they are serving a good purpose in doing so and even if every one in the United States agrees with them.

USURPATION OF POWER DESTROYS CONSTITUTION

When an agency of the Federal Government successfully usurps the power to change the Constitution, then, actually, we have no Constitution left.

By extending the doctrine enunciated in the school segregation cases, the Supreme Court can arbitrarily eliminate all human freedom in the United States and decree whatever form of government for this Nation that the members of the Supreme Court happen to want. This is the high road toward the ugliest kind of despotism and we are already on it.

Since the school segregation decision broke down constitutional barriers, the Supreme Court has already told the individual states that they cannot prosecute traitors against the United States; that they cannot guarantee railroad employees the right to work without being forced to join labor organizations they do not want to join; that they cannot fire subversive employees from their tax supported institutions, and that private employers, despite the Fourth Amendment, which guarantees the right of the people to be secure in their papers and effects, must permit labor union officials to examine their books.

This is only the beginning. Unless we avail ourselves of the means and have the will not only to checkmate but to roll back the consequences of Supreme Court decisions, which have been handed down in the past two years, our Constitution is already gone.

One means, of course, is for the people to elect state governors and other state officials who will invoke the doctrine of interposition, who will interpose the constitutional power of the individual states to protect the people against unconstitutional acts of the Federal Government. The question is whether the people have the will, the courage, to support such men for state offices.

Thomas Jefferson, author of the American Declaration of Independence, first explained the doctrine of "inter-

position" in 1798. And he explained the spirit of free government in terms which we Americans must remember and must use if we expect to save our way of life.

Jefferson believed that in a free society the people should never trust the men elected to high political office. Jefferson believed that when the people start looking upon their elected leaders as good and wise men, who can be trusted to do what is right, the Nation is headed for slavery.

Jefferson said, "In questions of power, let no more be heard of confidence in man, but bind him down from mischief by the chains of the Constitution."

Hitler, Stalin and the contemporary rulers in all Communist countries murdered and enslaved millions to promote the public welfare, as those worthies saw it. All tyrants are do-gooders. They do to the people what they think is good for the people even unto murdering them for the public benefit. They force the people to do what they think will be good for the people to do, even unto making the people commit national suicide, which is intended as a direct commentary on the current policies of the American government, forcing the American people to give away their wealth abroad to subsidize governments in the hands of men who hate us; spending so much on such foreign give-aways for so long that we have neglected the real defense of our own homeland.

TEN YEARS OF DESTRUCTIVE DO-GOODISM

General Curtis LeMay, in charge of America's Strategic Air Command, recently testified that the Soviets, within three years, will have enough long range bombers and nuclear weapons to destroy the United States.

Ten years ago we were so far ahead of the Soviets in the production and potential production of such weapons that it would have been absurd to assume that anyone could ever overtake us.

Since 1946, however, we have given away over 55½ billion dollars to foreign governments. And we have spent many times this amount maintaining American troops on foreign soil all over the earth and keeping mammoth, unneeded standing armies at home.

If we had spent one-tenth of these vast sums on proper defenses for our own homeland, America today would have overwhelming and invincible superiority in super weapons. But we didn't do it.



● MANUFACTURING

The Manufacturing Department has the objective of processing in the most effective manner, crude oil and other raw materials into saleable petroleum products. To meet this objective requires close coordination with other departments, particularly those who supply the crude oil and natural gas and those who market the finished products. Also, each refinery must supply data regarding yields of products from raw materials, as well as other operating information.

Within the Department itself are many complex coordination problems. To a great degree, Union Oil's seven refineries must be coordinated into a single operating plan. The various process units must be utilized to their best advantage. Allowance must be made for the scheduled shutdown of units for maintenance and inspection. And the operations must be maintained to conform with a minimum and maximum range of supply and demand.

Inasmuch as most of our processing units can be operated with different kinds of raw material and under varying conditions of temperature and pressure, there

are literally hundreds of possible combinations of cracking, conversion, distilling and treating operations. To determine the best scheme of operation, under definite conditions of supply and demand, necessitates the services of high-speed electronic computers.

The end result of this departmental coordination is a report called the Maximum Efficiency Rate, or MER, which is issued monthly by the Manufacturing Economics group. It includes data on the supply of raw material, the demand for all finished products, and a refinery operating plan, by months, for the following three months. It is a plan of operation for Manufacturing, Distribution and Marketing Departments.

from K. E. Kingman

● RESEARCH

In drilling oil wells it is the practice to recirculate drilling mud down through the hollow drill pipe, through the drill bit, and upward through the hole. The mud cools the bit, carries off drilling cuttings, and seals the well sides to prevent water loss into the formation. Often such water loss reduces productivity of the well.

Production Research discovered that the addition of polyacrylate salts to muds reduced water loss to the formation. Company patents now cover this feature. Recently an agreement was made with the Minnesota Mining and Manufacturing Company under which they plan to manufacture and sell the above type of additive for drilling fluids.

from Fred L. Hartley

● EXPLORATION

One of the most significant oil discoveries in California during the last six months took place in the Bridge Area of South Mountain Field, just south of Santa Paula in Ventura County. Because of a highly involved land situation here, several leasehold interests have been pooled, resulting in an acreage block in which Union Oil has a 50% operating interest. Three wells already completed on this pooled acreage are producing 1,800 barrels per day of high-gravity oil from depths not exceeding 9,000 feet. Three other drilling projects are in action on the block.

PROUD OF YOUR SERVICE YEARS?

Probably your Union Oil credit card doesn't show the number of years you have been a Union Oiler. The insignia (on annual but not on quarterly cards) honors only years of association as a credit card customer.

If you should like to have your credit card show your actual years of association as a Union Oil employee, send a written request, via your supervisor, to the Credit Card Center, San Francisco. Tell them the starting year of your current employment.

from W. C. Stevenson

and a number of proved locations are indicated.

A significant feature of this discovery is that the wells have penetrated and discovered production below a major fault known as the Oakridge Thrust. This is a long, easterly-westerly trending, major geological feature that forms the steep slope of hills along the south side of Santa Clara River Valley. In drilling through the fault, the wells have passed downward from older into younger formations. Production is found in Pliocene sands that are closed on the underside of the Oakridge Thrust.

There are numerous places along the fault where accumulations of this type might be sought, and the Company is now engaged in prospecting two additional favorable areas. It will be remembered that Union Oil Company was founded in Santa Paula 66 years ago. Fortunately during these years we have acquired a substantial acreage position throughout the Santa Clara River Valley.

from Sam Grinsfelder

● TRANSPORTATION & DISTRIBUTION

The SS AVILA sailed for Whittier, Juneau and Ketchikan in mid-July with a cargo of 5,300,000 gallons of refined and fuel oils for delivery to Company storage and the Alaska Juneau Gold Mine. This was the first trip to Alaskan ports for a commercial tankship of this size. The cargo exceeded by 1,600,000 gallons the average delivery in our smaller vessels.

On June 29, 1956 the President signed the "Federal-Aid Highway Act of 1956," the much publicized highway legislation originally requested by him in 1955. A significant feature of the law, which will continue until July 1, 1972, is that for the first time the Federal Government will, on a non-emergency basis, register certain commercial vehicles and collect fees, according to gross weights, for their operation on the highway. Federal Motor Fuel Tax, formerly 2c per gallon, was increased to 3c on July 1. Other provisions of the Act include an increase of 60% in truck-tire tax and a 25% increase in the tax paid on all new commercial vehicles.

from E. L. Hiatt

● PURCHASING

A week or so after the current steel strike began, the Government placed a freeze on large deliveries of nickel bearing steel and heavy steel plate. This action highlights the fact that steel production, for many months, has barely kept pace with demand. The supply of tubular goods, tank plate, structural shapes and, in fact, all of the many steel products required for our operations is dependent upon a high output of basic steel. Warehouses can supply many of our needs for a short period of time, but a continued lack of basic steel production will intensify procurement problems and affect all phases of Company activity.

from C. S. Perkins

● MARKETING

Plans are under way for construction of our first Type 140 service station in Alaska. Located at South Seward and Front Streets in Juneau, it will open in October as the outstanding station of Alaska's capital.

A new combination wholesale-retail unit has been opened at Happy Camp, California, 78 miles west of Yreka. Our consignee in this lumbering area is W. T. Jensen.

To permit more rapid development of our marketing activities in the states of Montana, Idaho, Wyoming, Utah and northeastern Nevada, the new Rocky Mountain Territory has been established. Territory headquarters are in Salt Lake City and R. D. Davis has been appointed territory manager.

Personnel changes during July included the appointment of C. E. Denton as executive representative, New York; Dumont Kimmell as district sales manager, wholesale, San Francisco; R. Brenchley as district sales manager, Arizona; H. W. Bragg as district sales manager, wholesale, Pasadena; G. S. Smith as manager wholesale sales, Southwest Territory; and A. R. Ousdahl as manager sales services, Head Office.

from Roy Linden

● PRODUCTION

It is a well known fact that oil fields are not abandoned because they run out of oil; rather, they reach a stage where it costs too much to recover the small amount of oil flowing into the wells. This stage in the life of an oil field occurs most generally when about one-third of the original oil in place has been recovered, leaving two-thirds of the original oil still in the reservoir. The crude yield diminishes because energy available to move the oil into the well has been used up.

Pressure maintenance and water flooding are currently

(Continued on page 23)

Meeting in Osaka, Japan, during June were, from left, (seated) S. Sugimoto, President K. Wada and Mrs. Wada of Maruzen Oil Company, Ltd., Philip Fell and W. E. Thompson of Union Oil, (standing) H. Yamamoto and C. Kato of Maruzen. Excellent business relationships established in 1949 between the companies continue to grow.



Bulk Storage Goes Underground

NEW MARKETING STATION AT BAKERSFIELD IS FIRST OF ITS KIND ON WEST COAST

From T. W. Proudfoot

LONG familiar to the American scene are the clusters of petroleum products tanks lining a railway spur or highway near practically every town. Called bulk plants or marketing stations, these are a principal storage source of the town's gasolines, fuel oils, solvents and kerosene.

Opened at Bakersfield, California, on June 1, 1956, is something new — a Union Oil Company marketing station whose five 20,000-gallon tanks are buried underground. This is the first Company installation of its kind and, we believe, the first to be constructed in the West by any major oil company.

There are several advantages of underground storage: It eliminates dikes and special drainage systems from yard areas. It greatly improves fire protection, since tanks and lines are not exposed. It eliminates the climbing of tanks to gauge commodities; our Bakersfield plantmen now take their gauges at ground level. Due to the

cooler temperatures of the earth, it reduces evaporation losses. Tankcars delivering their stocks to the plant are able to gravity-flow the commodities and reduce unloading time. Tanktruck withdrawals from storage, on the other hand, are made through electrically-driven pumps at no sacrifice in loading rate.

Other apparent advantages of the underground tanks are improved plant appearance, lower cost of construction and maintenance, and a better utilization of the valuable property where such plants usually are located.

In addition to the five unseen storage tanks, Bakersfield has a new concrete-block building enclosing office facilities, a warehouse and a sheltered loading platform. The entire project, costing approximately \$113,000, is located at 524 Delores Street, convenient to the downtown area of this thriving oil and agricultural center. It replaces a Kentucky Street plant that has served the community since October 10, 1915.

This new marketing station office and warehouse at Bakersfield replaces Kentucky Street plant in operation since 1915.





Made conspicuous by their disappearance are the conventional above-ground storage tanks. At Bakersfield, five 20,000-gallon tanks are buried underground. Only vent pipes and electric motors hint as to their whereabouts. Valuable property above the tanks now has other uses.



On hand to open the new plant June 1, 1956 were (front row, from left) Construction Superintendent F. S. Fiedler, F. J. Wilson, Claude Stanley, E. E. Ek; (center row) Southwest Territory Manager F. K. Cadwell, Ed Record, Resident Manager D. S. MacAlpine, District Sales Manager C. A. Goughnour; (back row) Bill Ladner and Bob Jensen.

introducing

RUSS ROSENE, like most other tankship radio operators, is known as "Sparks" to his shipmates. But he is known aboard and ashore also as one of the most talented photographer-journalists. During 10 years as a radio officer on east coast tankships and as a radio operator for the United Nations in the Gaza Strip, Russ made two round-the-world voyages and many adventuresome sidetrips. Recording his experiences in fine photographs, he and his wife, Nita, contributed travel articles to eight national magazines, including LIFE and AMERICAN.

Since joining the Union Oil tankship fleet in 1952, Russ's love of travel has not diminished. The two young Rosene children have already journeyed with their parents to most of the national parks and at least 32 of the 48 states. "Spark's" off-hours aboard the tankships often are spent behind the lens of a camera.



The latest Rosene productions are among their most pleasing—a series of audio-visual filmstrips designed to acquaint school children with the functions and ports of call of a tankship. Hundreds of the films are being used by schools in California and elsewhere. As a byproduct, Union Oil tankships are looming increasingly large on the educational horizon.

DR. GEROULD H. SMITH, senior research chemist at our Brea Research Center, is one of the West's foremost "rock hounds." Gem cutting, his first interest in this field, branched out to include crystallized minerals, jewelry, single crystals, and lectures on mineralogy to clubs, church, school and scout groups.



In obtaining his single crystal collection, accompanying photo, Jerry had two objectives in mind: perfection of

crystal form, and acquiring small specimens suitable for display and teaching. His collection, the only time it has ever been displayed competitively, won first award in the California Federation of Mineralogical Societies' Show in Oakland in 1951.

Dr. Smith is past president of East Bay Mineral Club, Oakland, and of the Long Beach Mineral and Gem Society. While he is "resting" from his research work at Brea, he conducts an adult education course at Santa Ana College in geology and minerals. His spare time is spent rearing five other gems—four sons and a daughter.

from Paul Doyle





SERVICE BIRTHDAY AWARDS

AUGUST 1956

MARKETING

Linden, Royal, Home Office	40
Apaka, William A., Honolulu	30
Hansen, Frank C., Seattle	30
Newell, Robert W., San Francisco	30
Williamson, William R., San Francisco	30
Chambers, Raleigh S., Seattle	25
Cole, Russell B., Portland	25
Gibson, Webster A., Barstow	25
Parker, Glenn G., Los Angeles	20
Lindstrom, Alvin L., Seattle	15
Middleton, Harold M., Portland	15
King, Nathan J., Los Angeles	15
Aleman, Alberto, Jr., Panama	10
Andrews, Kathryn W., San Francisco	10
Chetwood, Earl O., San Fernando	10
Howard, Genevieve F., Seattle	10
Mulholland, Earlda R., Home Office	10
Sealey, Sadie Q., Seattle	10
Watanabe, Thomas M., Honolulu	10

MANUFACTURING

Calori, Cleo A., Oleum	30
Cartwright, Eugene E., Oleum	30
Cox, Michael, Oleum	30
Ozenberger, LeRoy, Oleum	30
Waller, Arthur, Wilmington	30
Willis, Robert T., Oleum	30
Wilson, Harry L., Wilmington	30
Schleibaum, Frank J., Wilmington	20
Babcock, Dale L., Oleum	15
Cox, William E., Oleum	15
Irwin, Eugene H., Wilmington	15
Kinsman, Harold E., Oleum	15
Wright, Ross E., Wilmington	15
Barraclough, Samuel, Wilmington	10
Jacobs, Arthur L., Maltha	10
McMullen, Emerson C., Oleum	10
Metcalf, Marvin G., Oleum	10
Molloy, Edward J., Jr., Oleum	10
Smith, James E., Santa Maria	10

EXPLORATION & PRODUCTION

Eggleston, William S., Home Office	30
Gillingham, Otto N., Dominguez	30
Foster, Burdette R., Santa Maria	20
Fraser, John R., Bakersfield	20
Walters, Edward O., Orcutt	20
Arthur, Milan G., Home Office	15
Pimentel, Alfred E., Orcutt	15
Wiancko, Floyd E., Santa Paula	15
Beal, Raymond H., Bakersfield	10
Daries, Robert G., Home Office	10
Evert, Don E., Los Angeles	10

PIPELINE

Smith, Elwyn J., San Luis Obispo	30
Wood, Glenn C., San Luis Obispo	30
Nieberger, Robert, Santa Fe Springs	10

RESEARCH

Condon, John F., Jr., Brea	30
Tanner, Robert J., Brea	30

INDUSTRIAL RELATIONS

Miller, Charles H., Home Office	30
Law, Homer J., Home Office	20

PURCHASES

Perkins, Charles S., Home Office	30
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AUTOMOTIVE

Miller, John B., Santa Fe Springs	15
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WESTWAY PETROLEUM CO.

Bradley, Donald L., Oregon	15
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COMPTROLLERS

Collins, Charles R., Home Office	10
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Retirements



ANDREW K. ANDERSON

Field Department
Employed 1/16/17—Retired 8/1/56

LEONARD L. LORIMOR

Central Territory
Employed 3/14/19—Retired 8/1/56

LESLIE W. STONE

Field Department
Employed 5/6/19—Retired 8/1/56

ERWIN C. BECK

Pipe Line Department
Employed 3/8/20—Retired 8/1/56

JAMES C. TINGLEY

Northwest Territory
Employed 11/7/21—Retired 8/1/56

BONNIE B. PATE

Manufacturing Department
Employed 12/13/23—Retired 8/1/56

RAY F. POTTER

Southwest Territory
Employed 10/30/42—Retired 8/1/56

In Memoriam

Employee:

On June 20, 1956

PAUL E. TURNER
Oleum Refinery

Retiree:

On June 26, 1956

HERBERT E. COOK
Treasurer's Department

INDUSTRIAL SUMMARY—cont. from page 19

successful in bolstering the available energy and thereby increasing recovery. But these methods, good as they are, still leave a great deal to be desired, particularly in the recovery of low-gravity, high-viscosity oils. As a consequence, we are continually looking for better recovery methods.

A possible new recovery technique, now being studied with increased emphasis, is known as "thermal recovery." This is how it works in theory: Air is pumped into the oil sand through one or more injection wells, raising the temperature at the bottom of the well, or wells, until a small amount of the oil in the reservoir begins to burn. Combustion heats the remaining oil, making it fluid enough to be driven to producing wells by the generated

energy. The combustion rate can be controlled by the amount of air injected.

In addition to the studies being made of this process by our Production Research group, interest is being centered in a large-scale test in which a number of companies, including Union Oil, are cooperating. Located in the South Belridge Field near Taft, California, the experiment is being conducted by General Petroleum Corporation on a portion of the field offsetting Union Oil property. The test is a selected portion of the Tulare Zone at a depth of about 700 feet. The experiment, started last year, has now reached its most interesting phase in that combustion has just been commenced. Many interesting developments should occur in the next few months, although the full test will take an estimated two or three years.

from Dudley Tower

Harry Aggers

Or how to "strike oil" twice in the same place

"SOME PEOPLE BELIEVE that the more government has to say about business, the better.

"They argue, for instance, that the petroleum industry ought to be under more government control to keep America from running out of oil.



"What they forget is that it's just good business for oilmen to produce a property efficiently. We get more oil from a well when it is operated at its best rate of flow. This is one of the ways of conserving this natural resource!

"Take Dominguez field in California. Union and another company discovered oil there back in 1923.

"By 1936 oil production reached a peak of almost 31,000 barrels a day. But by 1947 our daily rate had declined to about 15,000 barrels.

"To get the most out of the field, we



"IT'S JUST GOOD BUSINESS FOR US TO PRODUCE EFFICIENTLY."

started waterflooding some areas. In our most recent project—which was started with the cooperation of the landowners and the other companies operating the field—we injected more than 7,000,000 barrels of water into 17 wells. This has forced oil out of 21 producing wells.

"As a result, we are now pumping 2,800 barrels of crude every day from these wells—an increase of 2,200 barrels a day over what we'd normally expect without waterflooding.

"You show me how government control could have added one barrel of oil to our production. Or conserved the pool any better so we can recover more oil in the future with methods which have yet to be developed!"

Harry Aggers—who has been with Union Oil for 22 years—manages our secondary recovery operations.

He believes that by 1975, at least 25% of all United States oil production will be by waterflooding. This does not include secondary recovery by gas injection or by methods yet to be developed.

The Dominguez results demonstrate again how efficiently a free oil industry achieves maximum economic production from a field, while conserving the source of the oil.

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YOUR COMMENTS ARE INVITED. Write: The President, Union Oil Company, Union Oil Building, Los Angeles 17, California.

Union Oil Company OF CALIFORNIA

MANUFACTURERS OF ROYAL TRITON, THE AMAZING PURPLE MOTOR OIL