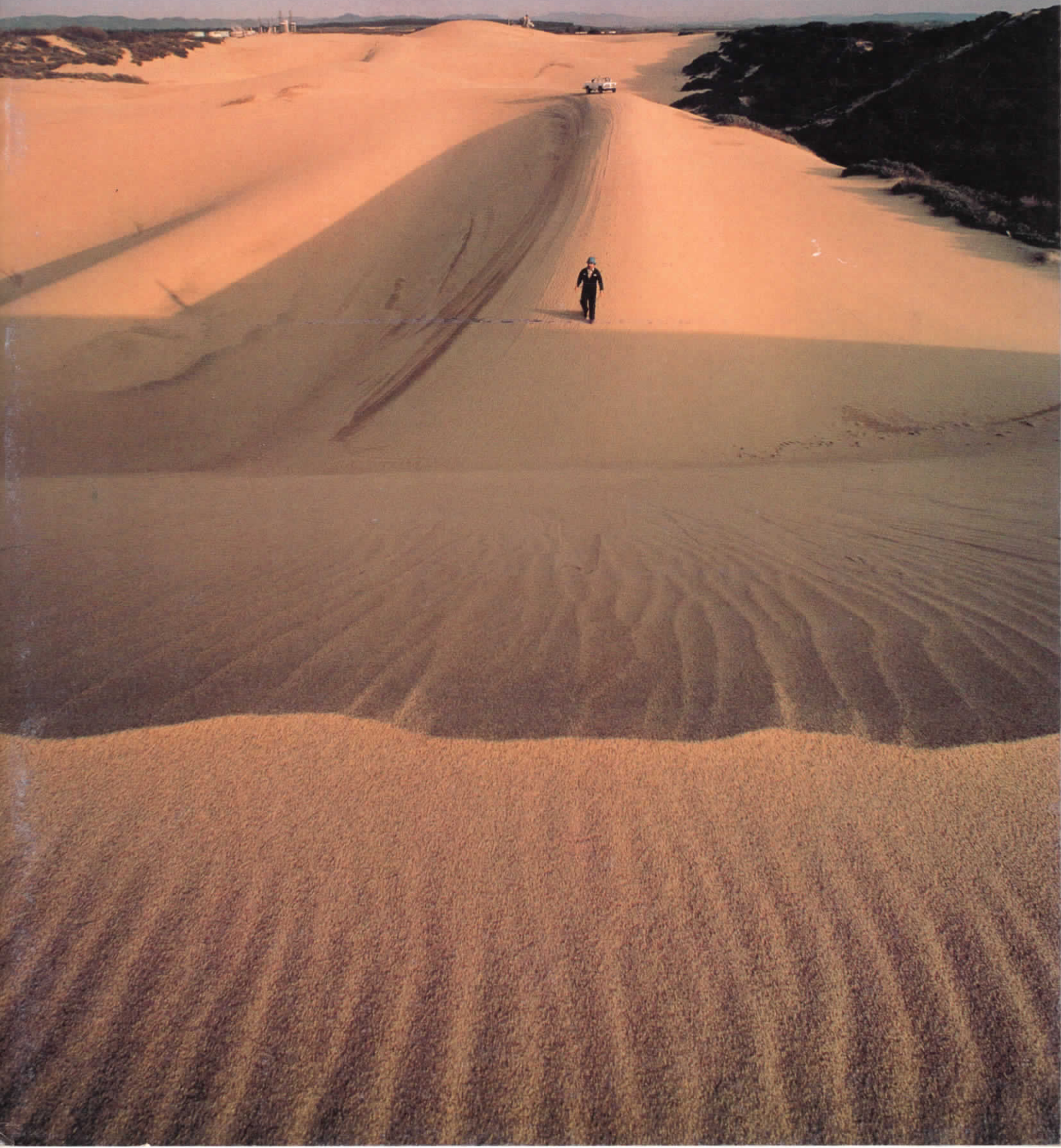

seventy
SIX

January
February 1985



EMERGENCY BOARD

LOCATION OF EMERGENCY Block 215 INSTALLATION Heather A
 TIME INCIDENT REPORTED 10.00 HOURS DATE 5/12/84
 TYPE OF EMERGENCY Helicopter Crash

SITUATION LOG

(KEEP UP TO DATE)

TIME/DATE	TYPE OF EMERGENCY AND UPDATES
10.00	Helicopter crashed on helideck. 14 Personnel on board. Helicopter on fire on helideck. Man lost overboard.
10.14	Brent log notified - SAR on way from Brent. 3 Injured.
10.15	Helicopter fire extinguished.
10.20	Supply boat, engines failed, drifting round platform.
10.25	Supply boat, smashed into platform, 16" riser hit, oil spillage.
10.28	SDa actioned, Y1 on fire, supply boat on fire.
10.34	Man overboard - Retrieved by standby vessel.
10.43	50-70 barrels spillage, 200 ft off platform, drifting wind.
10.48	Supply boat fire out. 3 Crew badly burned.
10.48	4 Union (originally not accounted for) found with burns.
10.51	Man overboard - now back on platform.
11.03	7 Personnel with burns airlifted to Treasure Finder (hospital). 3 Crew airlifted into platform.
11.11	Tropo system down, VHS communication only to be used + SITOR teleprinter.
11.19	Fire in X1 'A' module deluge operating no.1 lifeboat out of action - damaged.
11.30	Fatality reported (ex. aircraft passenger).
11.35	Brent Hospital doctor on board.
11.55	Helideck clear.
11.57	All fires out.
12.19	Muster stood down.
12.37	Mechanical damage report - Y1 and 'A' fire damage only. Pipeline riser - no information. Emergency under control. OIM to advise ASAP - of all non-essential personnel to be airlifted from platform.
12.50	Airlifted from platform. 12 injured being airlifted to Forresterhill Hospital, Aberdeen. (X Treasure Finder) ETA 13.30.
13.40	Plans being made to take 43 non-essential Personnel off the platform.

THIS IS A DRILL

Suddenly, the switchboard at Salvesen Tower in Aberdeen, Scotland, was a mass of flashing lights. There had been some sort of accident on the Heather offshore platform, and the press wanted to know all about it. So did relatives of platform workers.

But the crisis existed only on paper. It was a simulated disaster sponsored by the United Kingdom's Department of Energy. The North Sea Offshore Exercise 1984, or NOROX 84 North for short, was the seventh such exercise sponsored by the agency. It took place on the fifth of December. The players at Unionoil of Great Britain's Aberdeen office, as well as at other concerned agencies, knew that it would be no ordinary Wednesday. Something would happen, but they didn't know what.

The success of the test would depend a lot on emergency procedures and preparedness. Communications between the platform and other concerned agencies would have to be swift and accurate. Responses from the company and government agencies would have to be appropriate to avert panic and assure the prompt resolution of the crisis.

It was not just a question of how well Unionoil of Great Britain, the platform operator, would respond. Also important was how the response would be perceived. Would the headlines read "Disastrous helicopter crash aboard Heather" or "Quick action douses flames, saves lives"? Not only would emergency actions have to be well coordinated, but accurate information would have to be given to the press—and quickly, to make sure that the true story would be told on the afternoon and evening news programs and in the daily papers.

NOROX was primarily a test of communications and liaison, designed to interfere as little as possible with daily production operations, according to Peter Ryalls, manager of petroleum engineering for Unionoil. "In the event of a real emergency, the exercise would have been halted immediately."

Planning for NOROX 84 North began in August 1984. Three meetings were held and a realistic scenario was developed by Ryalls and representatives of the Department of Energy, the Coastguard and the Aberdeen police. Detailed agreements were also reached with all outside authorities and companies who would be participating, including other government agencies, coastal radio, medical facilities, helicopter and vessel operators, and other platform operators in the area.

As the day grew nearer, players were selected to fill the available roles. Members of the press would include Barry Porsche, Brian Mercedes, Clive Pontiac and Irene Peugeot. Joseph Public and Peter Crank represented concerned members of the public, as did Edward Concerned. And each of these telephone actors was allowed to play a relative of a platform worker. Actors were recruited from participating agencies and other oil companies.

On the morning of the exercise, all was normal on the Heather platform, located 90 miles east of the Shetland Islands off Scotland's rugged northern coast. Heather stands in 468 feet of water. Production averages 25,000 barrels of crude oil a day. There were 141 workers aboard the platform that day, about to be joined by another 14 from the incoming crew change helicopter. The wind was blowing 40 knots from the south and the seas were 15 to 18 feet, rough but not unusual for this part of the North Sea.

Part of the NOROX test of Unionoil's emergency preparedness included a theoretical fire aboard the supply ship Falderntor and the transfer of three injured men from the ship to Heather platform.



There was an extra person on board Heather that day, a representative of the Department of Energy. He was one of the directing staff, or "distaff," players in NOROX. At 10:00 a.m., this distaff player gave the first NOROX instructions to Patrick Buckman, offshore installation manager (OIM). Buckman immediately called Aberdeen headquarters, some 300 miles to the southwest, to report that the crew change helicopter had "crashed while landing on the helideck."

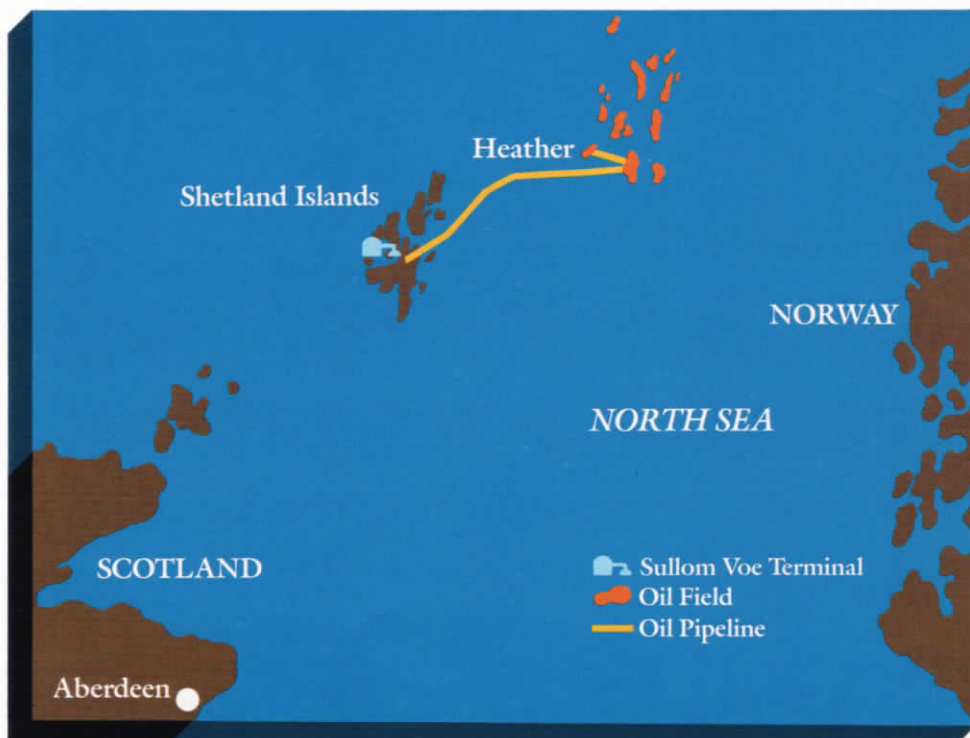
NOROX 84 North had begun. In Aberdeen, Dave Boshier, district safety and training supervisor, received the call from Heather and immediately set up an emergency control center. Boshier informed Wade Lundstrom, operations manager, and three other key people that emergency plans were going into action. He also made sure that the Coastguard and the Police Department were notified. For the next four hours, the control center would be bombarded by incoming inquiries and reports. The phones would stay hot as outgoing messages flew to the platform and to other concerned companies and agencies.

Wade Lundstrom would direct Aberdeen's responses. Boshier would concentrate on communications with the OIM. John Short, district production engineer, stayed in close touch with the Department of Energy in London, informing them at 10:13 of the incident and continually updating them throughout the day. Archie Cook, administrative manager, would work with John Wickman, new ventures manager, on briefing the press and preparing written statements.

Mike Estachy, purchasing and logistics manager, would compile information for the emergency bulletin board, which displayed continuous updates on the overall situation. Estachy called in Alex Beaton, warehouse supervisor, to handle liaison with the police and supply them with correct information to notify next-of-kin of those injured. All calls to and from relatives of injured personnel were handled by the police.

Since the oil industry is international, some of the calls were very long distance. Bobby Ewing, of the famous Dallas Ewings, was listed among the fictitious injured. And it was difficult to know who to call when James Bond, perhaps the world's most indestructible secret agent, turned up among the wounded. Others injured during the emergency included Sherlock Holmes, Ellery Queen and Johnboy Walton.

Estachy also called in the marine and aviation supervisors, Lewis Will and Len Grant, to coordinate with the Coastguard and the Red Sector Club. Their crucial task was to make sure that rescue and fire-fighting vessels, as well as winch-equipped search and rescue helicopters, would be on the scene as needed. (The Red Sector Club is an important organization made up of various operating oil companies in the field. Each cluster of fields in the North Sea has such a club, whose purpose it is to pool resources and equipment as needed for emergencies.)



The paper emergency was made a bit more difficult near the end of the exercise, when the ground staff of one of the helicopter firms walked off their jobs. Those helicopters were immediately removed from the "available" listings.

The emergency control center was all set by 10:14, when more news from the platform confirmed that the chopper had caught fire, and one passenger had fallen into the frigid waters below the platform. All production on the platform was stopped and the well currently being drilled was made safe. The safety standby vessel, *Grampian Endeavour*, was searching for the man overboard.

(There is always such a vessel standing by the platform in case of emergency.) A search and rescue helicopter had been dispatched to assist from Shell's Brent platform, 40 miles east.

Heather's crew had quickly extinguished the flames on the helideck and rescued the 13 remaining occupants of the helicopter. But the debris left the helideck out of commission. Three of the helicopter occupants were suffering from bruises and suspected fractures; all were suffering from shock. They were attended by the platform medic and two crewmen trained in first aid.

Top, John Wickman, Wade Lundstrom and Archie Cook held a conference for the acting press to answer questions about the Heather platform emergencies, summarized in the illustration below.



But the mock crises weren't over yet. A supply boat, the *Falderntor*, had been ordered to move away from the platform after the crash. It had not yet unloaded its cargo, which included aviation fuel. At 10:14, the *Falderntor*'s engines failed, setting it adrift around the platform. A tug, the *Tempest*, was dispatched from Brent to assist, but it wouldn't arrive until 11:45 a.m.

At 10:20, the *Falderntor* rammed the south side of the platform, fracturing a 16-inch oil riser and spilling oil. The oil caught fire, spreading flames to the supply boat and to the wellhead area of the platform. The platform's programmable control system automatically closed the valve at the upper end of the riser. Production was shut in at subsurface level and depressurized. The deluge fire fighting system came on within seconds of the start of the fire in the wellhead area.

Bosher in Aberdeen requested an update on the injured from Heather. Aboard the platform, the crew was mustered. Four were missing, and a team was immediately sent into the fire area to look for them. The four were found and taken to sick bay with burns.

In the midst of these paper emergencies, the line-of-sight telephone from Heather to Aberdeen went out—for real—briefly. Communications were immediately shifted to the back-up system, a radio link routed through the Shetland Islands. (When this occurs, communication switches from the normal telephone lines to a radio telephone, and the number of calls that can be made is limited.)

At 10:34, Heather reported that the man overboard had been picked up. After half an hour in the water, he was suffering from shock and exposure, as well as injuries received from the fall. A search and rescue helicopter winched him up from the *Grampian Endeavour* and moved him to the platform.

Meanwhile, the oil spill, estimated at 50 to 70 barrels, created a slick about 200 feet long. It was moving away from the platform.

By 10:44, the fire on the drifting supply vessel was out. At 10:55, the platform fire was extinguished. Three men on the supply ship and four on the platform were burned. Shortly after 11 a.m., a helicopter picked up the three injured men from the supply boat and transferred them to the platform.

The helicopters proved invaluable, eventually transferring all of the injured to the Treasure Finder hospital platform in the Brent field, and bringing a doctor from Brent to Heather.

At 11:07, the platform's line-of-sight radio link to Aberdeen went down again, this time because of the fictitious platform fire. Then, just as things were calming down, the fire re-ignited on the platform. Two more men were burned and one lifeboat was damaged. (Five lifeboats around the platform will accommodate a total of 330 persons, more than twice the number aboard at the time of the emergency.) The deluge system and fire-fighting react team soon extinguished these new fires, and the system was left on to cool the pipes.

At 11:26 the man overboard, one James Bond, was pronounced dead in sickbay. (The police next-of-kin contact officer reported that this was quite a shock to Roger Moore.)

The helideck was cleared before noon. At 12:10, the personnel muster on the platform was ended, and damage assessment had begun.

At 12:45, the platform was declared safe. The injured were enroute from Brent field to the Forrester Hill Hospital in Aberdeen, and the drifting supply vessel, *Falderntor*, had been taken under tow by the *Tempest*.

No sign of the oil spill had been reported, but all aircraft in the area were keeping a lookout. The fictional Norwegian ambassador, Robert Zephyr, had called shortly after noon. (The Norwegian sector borders the U.K. sector of the North Sea, so an oil spill could pose a threat to the Norwegian coastline.) He was updated shortly after 1 p.m.—no sign but everyone still looking. By the end of the exercise, it was assumed that the slick had broken up in the choppy waters.

Press calls had started soon after the emergency had been declared. The first, at 10:50, was from Duncan Toledo of the Associated Press. More than 100 calls were handled in three and a half hours. Four status reports were issued to the press, and telephone updates were given as requested.

At 1 p.m., John Wickman met with a television crew at Salvesen Tower. An hour later, Wickman, Wade Lundstrom and Archie Cook held a press conference at nearby Woodhill House. Some members of the *real* press looked on at the conference. David Young, energy correspondent for the London *Times*, reported that the 20 mock journalists played by oil company employees were "particularly truculent."

In the face of intense questioning, the Unionoil team did well. Lundstrom stated, "We are satisfied that our actions were responsible and our people will be commended." One member of the acting press said in his evaluation that Unionoil's overall attitude seemed to be "candid, compassionate and competent, expressing an air of muted concern." Other comments indicated that the press conference was well handled, and that the press response team could not be drawn into speculation.

The exercise effectively ended with the press conference. By that time, plans had been made to evacuate 43 non-essential personnel from the platform. Representatives of the Police Department and the Department of Energy were preparing to fly to the platform, and arrangements had been made to return James Bond's body to the mainland.

"Since its installation in 1978, the Heather platform has had no major incidents like the ones in the NOROX exercise," says Boshier. "The value of NOROX is that we polish our procedures, and we all gain confidence that our emergency procedures will work well if we ever need them."

NATURAL GAS DEREGULATION:

HALF WAY THERE?

New Year's day has always signified a time of resolutions and fresh starts—a belief that somehow the new year will be better than the year just ended.

January 1, 1985 may have marked just such a turning point for the U.S. natural gas industry with a significant departure from 47 years of government control. On that day, the price of approximately 50 percent of the country's natural gas was deregulated at the well-head. While this partial deregulation is a move in the right direction, Union strongly favors the deregulation of all natural gas.

Union is a very large natural gas producer, ranking tenth in the nation for total net production. Well over half of our gas production is still regulated under current legislation. Other producers face similar situations.

In the United States, the many wells that continue to be regulated are destined to reach their economic limits much too soon. That is, they will be shut in when the very low prices received for the gas can no longer cover the operating costs. If these wells were deregulated, the gas price would rise to a market level. This would not only lengthen the productive lives of these wells, but in many cases would provide producers with the economic incentive to use special procedures to enhance production and so obtain additional reserves. Many trillions of cubic feet of additional gas reserves would become available to the market.

But, to many, the deregulation issue—partial or total—is a controversial one. Will the January 1 partial deregulation be cause for new year optimism or old year worry? Will the nation face another bitter winter, like the one of 1976-77 when much of the nation suffered short supplies and loss of service? Will consumer gas prices shoot up?

“I think the fear of a fly-up is unwarranted,” says James S. Brown, vice president of the Oil and Gas Division's natural gas and gas liquids group. “We were in a competitive market long before January 1, 1985 due to price-driven user conservation and competition from alternate fuels, particularly No. 6 fuel oil. This competitive market works against any possible fly-up.”

“In a competitive market, the price of gas is usually driven by the price of crude oil.”

“Beginning in late 1978, Congressional price incentives to producers for newly-developed gas resulted in excess gas availability, and there has been a switch from a seller's market to a buyer's market,” Brown continues. “It's important to remember that, in a competitive market, the price of gas is usually driven by the price of crude oil, because crude prices dictate the price of fuels which compete with gas. Recently, this gas-to-crude relationship has been modified to some degree by gas-to-gas competition among producers and pipelines.”

Competition, incentives and controls—how is it possible? It has happened under the Natural Gas Policy Act of 1978 (NGPA). This act provided for the partial, phased deregulation of gas prices leading up to January 1, 1985, the date when most gas found after April 1977 (or “new” gas as it has come to be known) would be allowed to demand market prices. Gas from wells deeper than 15,000 feet (or “deep” gas) was immediately decontrolled by the 1978 legislation, while supplies of gas produced prior to 1977 (or “old” gas) were to remain under price controls forever.

Confusing, isn't it? If you're confused, think of the gas producer who must deal with Natural Gas Policy Act regulations that have created 28 different categories of natural gas. These come complete with 28 different sets of rules and prices ranging from 30 cents per thousand cubic feet to almost six dollars per thousand cubic feet.

For much of this century, crude oil and coal have been the dominant fuels in this country. Early drillers considered gas, often found with oil deposits, a nuisance. This highly combustible by-product was either reinjected into the reservoir or flared off. But, natural gas had the advantages of being cheap, clean-burning and versatile. It burned with twice the energy of coal, needed no refining and could be used in its natural state.



James S. Brown, vice president, natural gas and gas liquids group

Natural gas had the advantages of being cheap, clean-burning and versatile.

No wonder, then, that with the advance of technology natural gas usage grew. Distribution was a major obstacle until the perfection of electrical welding techniques in the 1920s. This allowed construction of leak-proof pipelines with welded joints that could carry gas under pressure over great distances. By 1944, natural gas made up 12 percent of the nation's energy mix; in 1984, 25 percent.

As the natural gas industry developed, state governments began regulating prices at the wellhead, telling producers what they could charge. Meanwhile, municipalities were regulating the distribution of gas as a public utility. Pipeliners were in the middle, buying low and selling high without regulation — until June 1938 when the Natural Gas Act passed Congress without a single dissenting vote in either house.

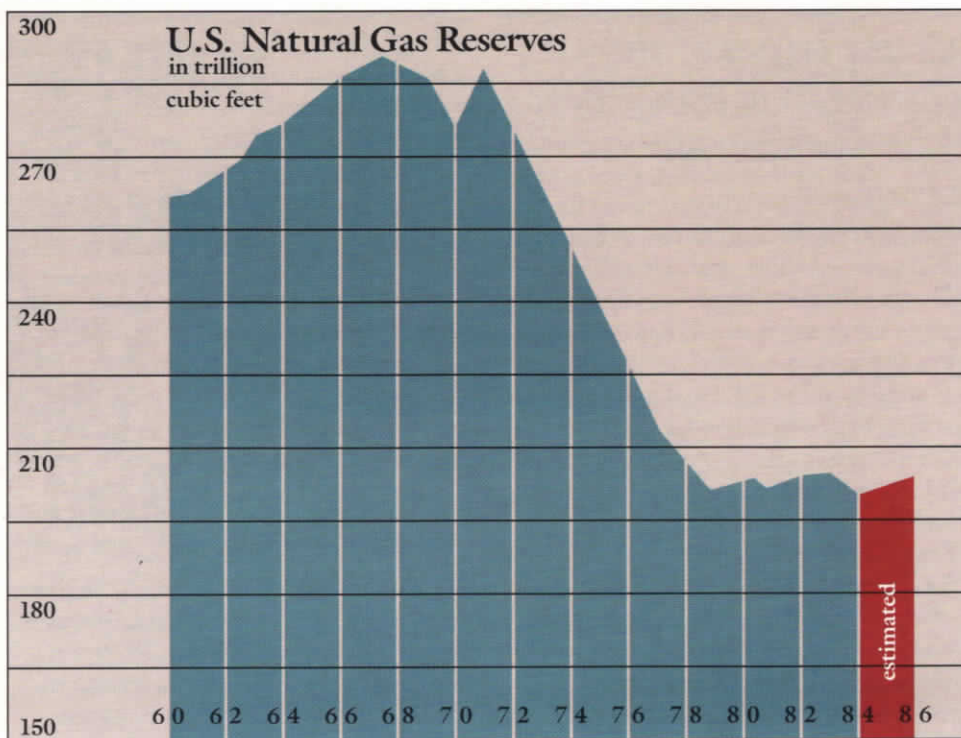
The Natural Gas Act gave the Federal Power Commission (FPC) the authority to establish pipeline rates, control facilities, issue permits to build new pipelines or expand pipeline facilities, regulate natural gas imports and exports, and mandate gas service to communities that had been unable to obtain gas. The act's primary purpose was to protect the interests of consumers by keeping prices low.

In June 1954, a Supreme Court ruling allowed the FPC to expand its authority beyond pipelines. Now, it would also regulate the wellhead price of gas used in interstate commerce. The FPC responded by basing prices on out-dated cost estimates of finding and processing gas, rather than on current market situations.

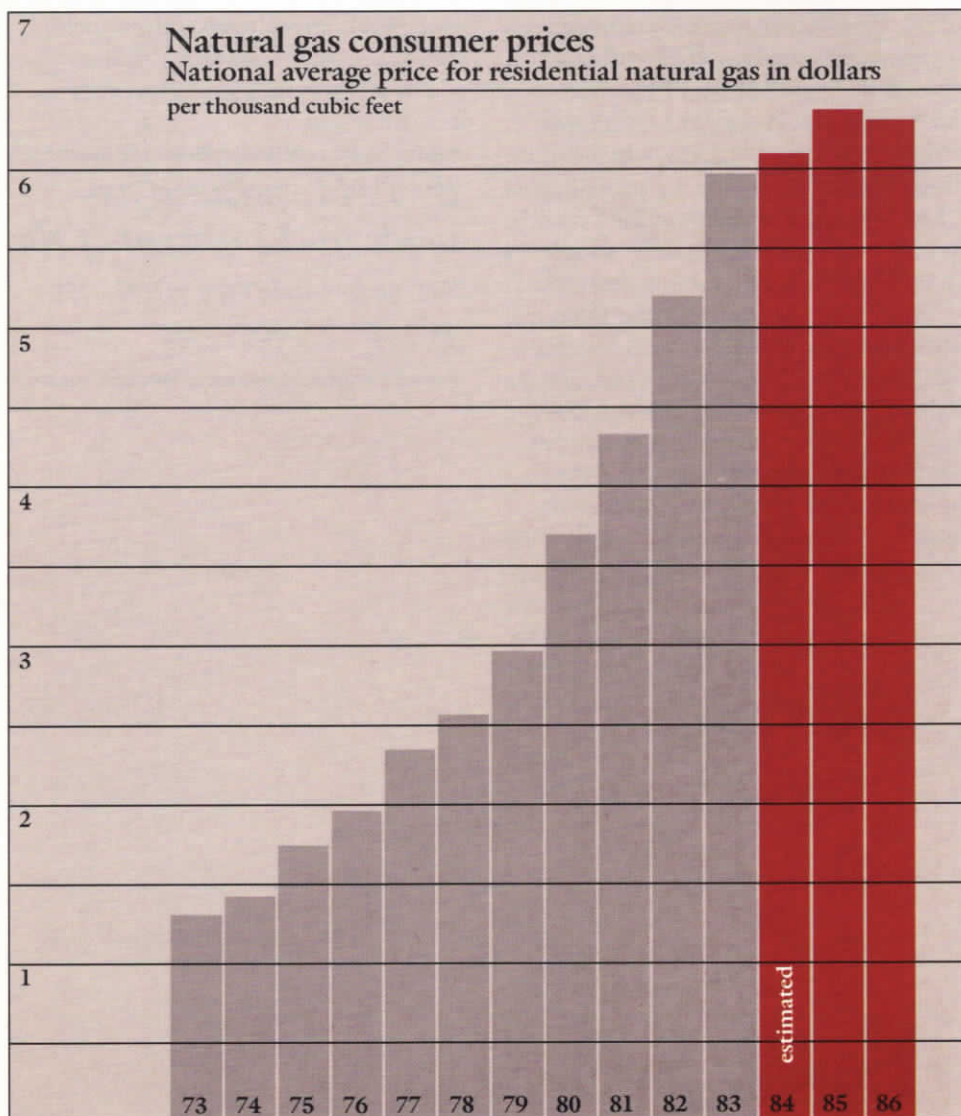
While this left little incentive to drill for gas, production was bolstered by discoveries of gas as a by-product of the continuing search for oil. So, it took many years for demand to catch up with supply.

But demand was growing. Natural gas prices were far lower than the cost of electricity and usually lower than the cost of competing fuel oils. By the late '60s, levels of demand and supply were coming together. Then, in 1970, production of both oil and gas started to decline. The widening gap between demand and supply was filled by foreign imports. (It is interesting to note that competitively-priced intra-state gas—sold in the same state in which it was produced—easily met local demands.)

By 1944, natural gas made up 12 percent of the nation's energy mix; in 1984, 25 percent.



Sources: Department of Energy; 1983-86 estimates by Union Oil & Gas Division



Source: Energy Information Administration

Although it did provide for the partial, phased deregulation of gas prices described earlier, the NGPA extended controls to cover intrastate as well as interstate gas. The dichotomy that had characterized the gas market before NGPA— interstate versus intrastate gas—was replaced with old (pre-1977) gas versus new gas.

The NGPA's phased deregulation was aimed only at wellhead prices charged by producers and paid by pipelines. Pipeline and distribution company rates would continue to be regulated by the Federal Energy Regulatory Commission (formerly the FPC) and state public utility commissions, respectively.

“The excess of deliverability or ‘gas bubble,’ as it is often called, will be with us for another couple of years.”

Among these complexities, producers found the incentive to drill aggressively for the deregulated deep gas that could be sold at market prices. The federal government was finally moving in the right direction.

Meanwhile, pipeliners, frightened by the 1976-77 shortages, scrambled to tie up assured reserves. They contracted to buy expensive, but plentiful decontrolled gas, as well as high-priced imports. They also agreed to “take-or-pay” provisions, requiring them to pay for contracted amounts whether or not they took the gas. They were expecting a steadily rising gas demand.

However, world oil prices peaked in 1979, then started to drop. Energy conservation took effect and a severe recession hit the economy. This resulted in far less demand than the pipeline companies expected, so they had large surpluses of gas. To reduce take-or-pay obligations, the pipeline companies purchased the more expensive gas and cut back on low-cost regulated gas. While this minimized their financial penalties, the result was unusual—rising prices in a period of excess supply. The structure of the NGPA had severely distorted the pricing of natural gas in the United States.

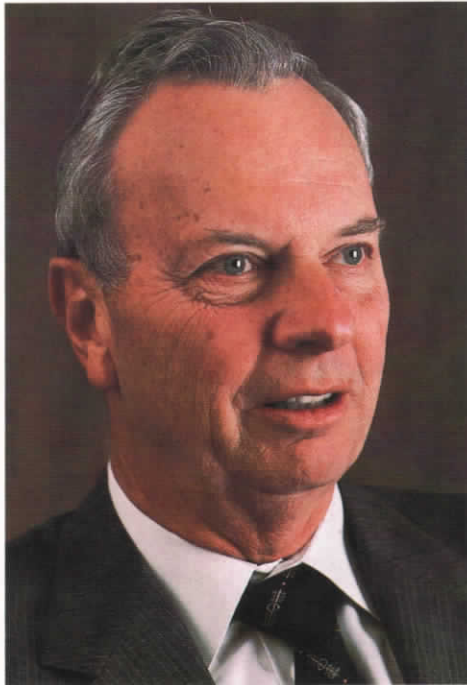
“I think the excess of deliverability or ‘gas bubble,’ as it is often called, will be with us for another couple of years,” Brown says. “Its duration is extremely price-sensitive. So, if the federal and state governments permit competitive pricing to continue, we can expect market forces to balance supply and demand rather quickly.”

Six years after the passage of the NGPA, the market has changed. Today’s excess gas availability is due to partial deregulation, recession, conservation and imports from Canada. We are also seeing competition in the gas marketplace. Consumers have benefited from a halt in gas price increases that measured an average 19 percent a year from 1979 through 1983.

With total decontrol, one study predicts that prices would decline an additional 19 to 55 cents per thousand cubic feet.

A recent study by the Department of Energy concludes that wellhead natural gas prices will not fly-up, but will decline now that half of the nation’s natural gas has been decontrolled. The report states that prices would fall from one to four percent between 1985 and 1987. With total decontrol, the study predicts that prices would decline an additional 19 to 55 cents per thousand cubic feet.

Another study, conducted by the National Association of Regulatory Utility Commissioners, surveyed 17 major interstate pipelines. It concluded that there would be “little or no fly-up” of natural gas prices after partial deregulation on January 1. Price renegotiations, take-or-pay negotiations and stricter interpretations of contract provisions would combine with market forces to work against such price increases.



“It is our hope that the federal government will continue to encourage a more competitive market.”

“Already there have been dramatic changes in the gas market,” Brown says, “and we will probably be seeing a lot more. First of all, the traditional reliance on long-term contracts with pipelines is changing. New marketing mechanisms are developing which will allow pipelines and distribution companies, producers and consumers to adjust more rapidly to changing market conditions. These include shorter term and more flexible pipeline contracts, direct producer to consumer sales, clearing houses, and brokered sales.”

These new marketing developments bode well for natural gas producers, Brown feels. “They give producers better access to markets, establish price indicators, and help smooth out the ‘yo-yo’ supply-demand upsets that are so disruptive to the market.

“It is our hope,” he adds, “that the federal government will continue to encourage a more competitive market where the producer has access directly to the fuel user and can compete for his business at that level.

“We strongly favor the decontrol of all natural gas,” Brown concludes. “Deregulation of old gas should bring an additional 30 to 50 trillion cubic feet to the market over the next several years. It should also eliminate all sorts of pricing inequities that currently exist. And, best of all, it should lower and stabilize the price of gas to the consumer.”

THE WORLD IS HIS MARKET- PLACE

Union's Technology Sales Department is responsible for licensing all of the company's technology—whether it be a petroleum refining or chemical process, an enhanced oil recovery technique, an additive for fuels and lubricants or a computer program.

Created by former Union chairman Reese Taylor in 1952, the department was initially run by current Unocal chairman and president Fred L. Hartley, who established it as a profitable business for the company.

Since 1959, Bill Baral has run the department. A lean but effective organization (the staff now consists of nine professionals), Technology Sales is part of the company's Science and Technology Division and is based at the Fred L. Hartley Research Center in Brea.

Baral joined Union Oil in 1941 following his graduation from the University of Minnesota with a degree in chemical engineering. He holds eight U.S. patents and has authored numerous technical papers on petroleum refining and technology transfer.

Mr. Baral's varied experiences with the company have included refinery operations, process development, process engineering, and project engineering. After his move to technology sales, Baral became manager of commercial development in 1962, assistant director of research in 1967, and vice president of technology sales in 1979.

Seventy Six recently spoke with Bill Baral, who plans to retire this spring. The wide-ranging discussion took place in Baral's Brea office, which is decorated with art objects gathered during his worldwide travels.



Bill Baral, right, has headed Union's Technology Sales Department for more than 25 years. A part of Union's Science and Technology Division, Tech Sales is based at the company's Brea research facility.



Why is having a technology sales department important to Union Oil?

Our basic role is to sell Union technology—which includes both patents, and trade secrets, or “know-how”—to other companies throughout the world. The importance of this work, as I see it, is three-fold. First of all, the sale of technology reduces Union Oil’s cost of research by generating substantial royalty income. Second, it’s a way of determining the true value of your research. If you can sell your technology, inventions and know-how to other companies, you prove that you have a good product.

A third purpose or effect of technology sales is that it gives our research scientists and engineers opportunities to see their technology used by companies throughout the world. And it gives them a chance to participate in transferring that technology—getting the designs prepared, and helping with plant start-ups and operations.

From a broader perspective, making the processes and technologies we develop available to others through licensing is beneficial to the public as well. A great deal of Union’s refining technology work, for example, has served the public interest by helping to improve our air quality.

What was the first large-scale technology that Union sold?

The first major process we licensed—the one that really launched our technology sales operation—was Union’s hydro-treating technology, which came to be known as Unionfining. But the big breakthrough in terms of high profit generation started with our first sales of Unicrackers, our hydrocracking technology. Union Oil’s first Unicracker came on stream at the Los Angeles refinery in 1964, and by then we’d already licenced two more.

How do you go about selling something as huge, expensive and complex as a Unicracker?

The fundamental rule is the same one that all salesmen operate by: the more doors you knock on, the more sales you’ll make. Our sales people attend technical meetings all over the world. As they get interest from potential customers, they call on them and keep following up.



The Unicracker: a key technology.

Is the company often approached by others interested in licensing our technology?

Yes. Often it comes by word of mouth, from other refiners. We’re known throughout the industry for some key technologies. And over the years, we’ve encouraged our scientists to prepare technical papers on their inventions. So there is a great deal of literature in the technical media on Union Oil technology.

We also make a special effort to cooperate with the large international contractors—the detailed blueprint people, who actually build the plants. We get a lot of good recommendations from contractors all over the world.

Is it important that your sales staff be technically trained?

Absolutely. Most of the people we deal with are refinery and engineering people. If you can’t speak to them in their language—if you can’t really *know* your products—you’re going to be at a competitive disadvantage. Our salesmen don’t necessarily have to be engineers—though most of them are—but they do have to have technical backgrounds.

How long does it take to complete a major sale?

It can take years. I’ll give you an example. Several years ago, another major oil company announced plans to build the world’s first refinery based on maximum use of hydroprocessing. We called on them as soon as we started developing Unicracking. After evaluating offers from several other companies, their vice president of refining chose our technology. This was in 1970. After we shook hands on the sale, he showed me a letter I’d written him out-lining why Unicracking was right for their proposed refinery. The letter was dated 1961. So here, nine years later, that first sales contact had finally paid off.

Is it hard to persevere when a single sale can take that long?

At times it can be frustrating. But you’ve got to remember that we’re talking about very complex and expensive products. The challenge lies in keeping up your interest, your technical knowledge of the product, and your enthusiasm.

I might emphasize that our contact with a client doesn’t cease after a sale is made. Licensing of our technology is a long-term arrangement for both the client and Union Oil Company. Some of our licensees have been partners with us for almost 20 years.



Union was the first major oil company to license technology to the People's Republic of China. How did that relationship develop?

In the early '70s, when it became apparent that China was opening up, we had some of the technical papers relating to our successful processes translated into Chinese. Then we arranged with friendly contractors to distribute these to the refiners and chemical plant users in China. Through this type of approach, the Chinese became knowledgeable about Union Oil Company.

Then in 1977, the company got an invitation from the Chinese to make a presentation on sale of bulk urea (a chemical fertilizer that Union Oil produces). A team from the Chemicals Division plus myself went to China, and we had seven days of discussion and sight-seeing. Before the group left, we closed a contract to sell urea to China—and to this day, Union is still the single biggest seller of urea to China.

While I was there, I had the opportunity to make some personal sales presentations on Union's refining technology. The following spring, in 1978, the Chinese invited us to go over for a formal technology presentation.

At the time, China was still closed to America. You couldn't just go there and knock on doors; the only way you could go was by invitation. But in fact this invitation was the result of years of sales efforts by various indirect means.

Anyway, things moved quickly after that. We made our general presentation, competed against world suppliers, and wound up capturing sales of four hydrocrackers that same year. None of our competitors got any. We also sold one hydrotreating plant, and the next year a pair of pilot plants.



Above: Senior technology sales representative Larry Roesler (left) shares a light moment with Jerry Simmons, technology sales manager. Below, Bill Baral chats with clients from the Peoples Republic of China at a recent conference of Unicracking licensees.

After a sale is completed, who hammers out the details of the agreement?

A patent attorney joins the sales executive to draw up an agreement with the customer. This will cover royalty rates, the services we'll provide, and rights they will have. We maintain a standard schedule of royalties for the different processes we license. But the actual fee is related to the size of the plant and the sophistication of technology.



Union licensees come from 45 nations.

What's the next step after a sale is finalized?

That's where Union scientists and engineers re-enter the picture. They help prepare the blueprints and determine what the engineering and design requirements are for the technology that's being purchased. When a plant is ready to be put on stream, our engineers go over and assist in the start-up. Then they follow up during the plant's operation, providing technical assistance and helping solve any problems that might arise. Our technology sales staff coordinates these engineering services as the project develops.

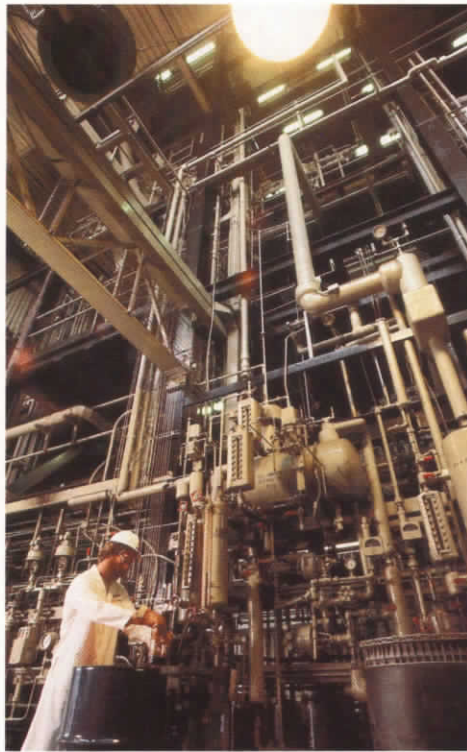
Does Technology Sales have its own separate engineering department?

No, our engineers come from the regular research staff. Since many internal projects are of a long-range nature, engineers can rotate between company needs and client needs. That way the engineers have a regular environment of work, but can also gain experience in the refineries working with clients and seeing the technology used. It's a good system from both a research and a sales perspective.

Who else from the research division might get involved in your work?

Many people. Very often an agreement includes an obligation from Union Oil to use our pilot plants, which are midget replicas of our big commercial Uni-crackers. A client might send us oil drums with different feedstocks, for example, and we'll do test runs to determine yields and product qualities.

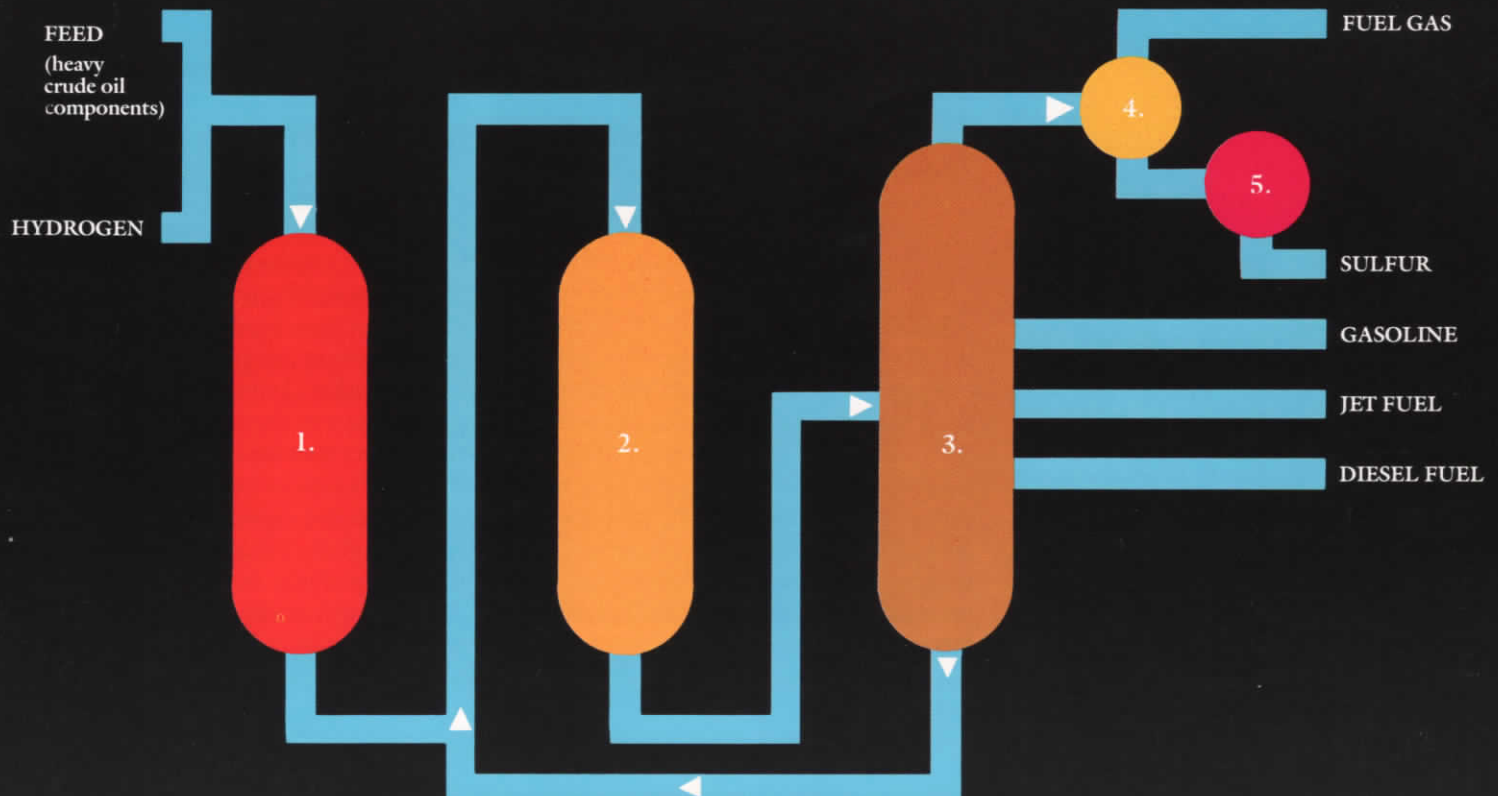
Or, there may be a catalyst question, and our sales person might need the assistance of one of our catalyst development people. So we have process engineers, process development people, and catalyst specialists all very involved with us. And the fact that we can offer these kinds of hands-on opportunities has been very helpful in attracting good scientists for our Science and Technology Division.



Union's pilot plants are midget versions of full-scale commercial units. Union research technicians often do test runs of a client's feedstocks as part of a licensing agreement.

UNICRACKING PLANT

(Simplified representation)



1. Hydrotreating Reactor—changes nitrogen-containing contaminants to ammonia, and sulfur-containing contaminants to hydrogen sulfide

2. Hydrocracking Reactor—changes feed to fuel gas, gasoline, jet fuel and diesel fuel

3. Distillation Unit—separates products from unchanged feed; returns unchanged feed for further processing

4. Gas Plant—separates hydrogen sulfide from fuel gas product

5. Sulfur Plant—changes hydrogen sulfide to sulfur product

Is Union's overall research effort geared to sales potential as well as our own needs?

We take the position that this research facility is here to serve the needs of the operating divisions of Union Oil company. To the extent that the resulting technology is licensable, and therefore income-generating, that's great.

We do try to be the eyes and ears of the research division in anticipating new technology needs, and also in spotting potential technology improvements in our industry. We do this for two reasons. One is that if others need something, there's a good chance that Union Oil will be able to use it as well. Second, it helps us in our sales efforts. Sales, in turn, help to generate further advances in process research by providing income and giving us a broader base of utilization for the technology we develop. So it's a synergistic relationship.

What forms the appeal of Union technology to licensees?

The bottom line, of course, is the quality of our technology and the research staff that develops it. But there's more to it than that. Virtually every one of our sales in refining technology involves a major capital expenditure on the part of the buyer. And he's not just purchasing hardware. He not only wants technology that's good in the lab; he wants to know that it's been tested and proven in the field. He wants engineering information on schedule along with good technical service provided by experienced, competent people. Union has built an excellent reputation for these things.

Has Union licensed much technology outside of the refining field?

In terms of revenue, refining and catalyst technology have always been the bread and butter of this department. But one of our first major licenses in the early days involved a patent that Union had on a key part of lube oil additives. Today's modern, long-life lubes all go back to that compound, and it was a Union Oil scientist who invented it back in the 1930s.

Other areas where we've licensed products and technology include environmental quality control, petrochemicals, enhanced oil recovery, and alternative energy.

Is technology sales a competitive arena within the oil industry?

Very. Oil companies, as a group, have large investments in research and development. They are all eager to get out and sell like we do. I think we've been more successful than most. For every license Union takes, we sell 10. That ratio is a good indication of the vitality of our research operation relative to others in the industry.

How does one stay on top of a field that's so competitive?

It's vitally important to keep alert to industry needs and trends—not only domestically, but on a worldwide scale. Most of our sales people, particularly the senior ones of us, have done a great deal of international travel. We attend major international petroleum conventions and travel to places where there are large gatherings of people from the oil industry. By being there and talking to people, we create opportunities to make ourselves known. And we might start a sales dialogue that will develop into a contract.

You and your staff must put in a lot of travel time. Does that ever get to be a burden?

There are periods in any given year where it becomes almost awesome to have someone make a call in South Africa, another in Southeast Asia, then another in Central Europe. Some of us have had years of up to 50 percent on the road. But there aren't usually that many large-scale projects going on at once, so we've learned to manage the scope of our operations. We like each sales executive to spend at least one week a month away from the office, meeting with potential or existing clients.

How much travel have you done personally in the years you've worked in tech sales?

I'd estimate it to be well over two million miles. My peak year was 1978, when I had seven trips to China, six trips to Washington, D.C., two European trips, and one to South America. I traveled close to 400,000 miles.

Is it important to be aware of cultural differences when you're meeting with customers overseas?

I think it's very important to recognize special customs of the host country, to learn a few words of their language, and to understand the way in which ordinary courtesies are extended. When we began our big selling campaign to open up the China market, I took my own interpreters there to show the Chinese people the respect that we Americans had for them. It's easy to become the arrogant American and expect everyone else to speak English. I think it helps dispel that image if you make a simple, sincere effort to be friendly and responsive to your client.

Do any cultural experiences that you've encountered over the years stand out?

I would say that I've particularly enjoyed the cultural encounters in all of the Asian countries. And I have found it very rewarding to be involved in bringing advanced technology to many of the world's emerging nations.

Years ago, Union Oil technology went into the newly constructed Taoyuan refinery, located at the northern end of Taiwan. This was just a barren, rock strewn area at the time, but now it's virtually a metropolis. And the nucleus was that modern refinery. It produced energy, it created jobs, and it inspired people.

Just this week we were in contact with an oil company in the Ivory Coast of Africa. Their new Unicracking plant is running, benefitting the people—and you can see the impact growing every time you're there. In the same way, we have brought advanced technology to Egypt, Nigeria, and several other emerging nations.

Would you say that technology transfer transcends ideological barriers?

Yes. I've found that when you sit down and discuss things, people everywhere really speak the same language. And they're interested in maintaining a continued flow of communication. In my 25-plus years of working in this field, I've never encountered a major barrier. I've always felt that technology transfer promotes international harmony and understanding.



*Left: Control room, pilot plant building.
"The bottom line of our success is the quality of our technology and the research staff that develops it."*



What are your thoughts on the future of technology sales in our industry?

As the years go by, crude oil supplies will become more difficult to find and produce. Advances in refining and catalyst technology will be more critical, and that means continued opportunities for sales growth in the refining field. I also think a building market will develop for enhanced oil recovery technology. And our gas treating processes will be a growth area, as more nations begin to adopt clean air standards. So I think the future looks very bright.

As you look back over your years in tech sales, do any special feelings stand out?

In sum, I'd say the overriding feeling is one of pride and satisfaction. I've watched us grow from a two-person operation—flying, essentially, from the seat of the pants—into one of the most effective and successful technology transfer organizations in the process industry. We have built up a multi-million dollar a year business. Over 200 process plants have been licensed, and we have customers in 45 countries. I'm very proud of that record.

I'm equally proud that in all those years, we have never had to answer for any significant process failures that were Union Oil's fault. The credit for that goes to the scientists and engineers who have developed the technology and applied it so well. Our technology has been so good that with Unicracking, for example, we have replaced the technology of competitors in 15 plants—and it has never once happened to us. When I meet clients, they're always friends. 76



Union-developed catalysts, top left, are in use throughout the world in the company's proprietary processes. "For every license Union takes, we sell 10. That ratio is a good indication of the vitality of our research operation."

LEADING THE PACK: UNION PROCESS TECHNOLOGY

In terms of revenue, 90 percent of Union Oil's licensing activity involves the company's refining and catalyst technology. Today, Union-invented refining techniques and materials are among the most widely licensed in the world. Among the leading technologies are:

Unionfining

Developed by Union scientists in the late 1940s, Unionfining is a patented hydrotreating technology which uses hydrogen and catalysts to remove sulfur, nitrogen and other contaminants from a variety of petroleum products. Unionfining is now licensed from Union by more than 30 companies. There are over 70 Unionfining units in operation or under construction worldwide, processing 800,000 barrels a day of petroleum products such as gasoline, aviation fuels and kerosene.

Unicracking

In the early 1960s, Union researchers developed a petroleum refining process called Unicracking. Simply put, Unicracking converts heavy, sulfur-laden crude oil components into clean, high-grade fuels and petrochemical feedstocks. The process employs hydrogen and special catalysts to change the structure of the petroleum molecules themselves. In so doing, the Unicracking process removes virtually all sulfur and nitrogen compounds from the heavy oil feedstocks.

Today, Unicracking technology accounts for over 60 percent of all licensed hydrocracking technology worldwide. It has been selected for use in more than 50 plants, by 38 companies in 14 countries. When all of these plants are completed and operating, they will process more than one million barrels of feedstocks per day.

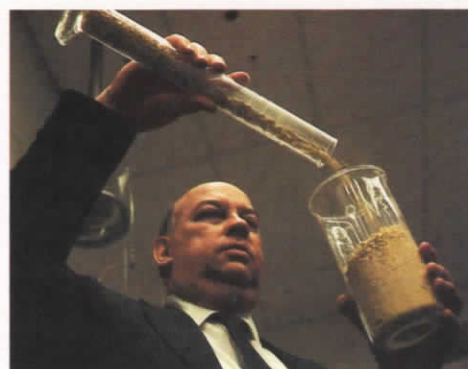
Unicracking/HDS

In the early 1970s, Unicracking/HDS was developed to remove sulfur and a substantial portion of metallic contaminants from heavy residual fuel oils. Seven large commercial plants are licensed. They will process about 400,000 barrels of residual oils per day.

Gas Processes

From the late 1960s on, Union research has developed or shared in the development of some half dozen gas desulfurization processes which are in use throughout the world. Among them are the Beavon Sulfur Recovery Process (BSRP), Selectox, and Unisulf. These technologies are employed for taking sulfur compounds out of gases—such as those produced in refineries, those associated with geothermal steam, natural gas, and others.

When all of the 60 plants incorporating these gas-scrubbing technologies are complete, they will prevent more than 1,000 tons of sulfur each day from being emitted into the earth's atmosphere.



John Ward, Catalyst Wizard

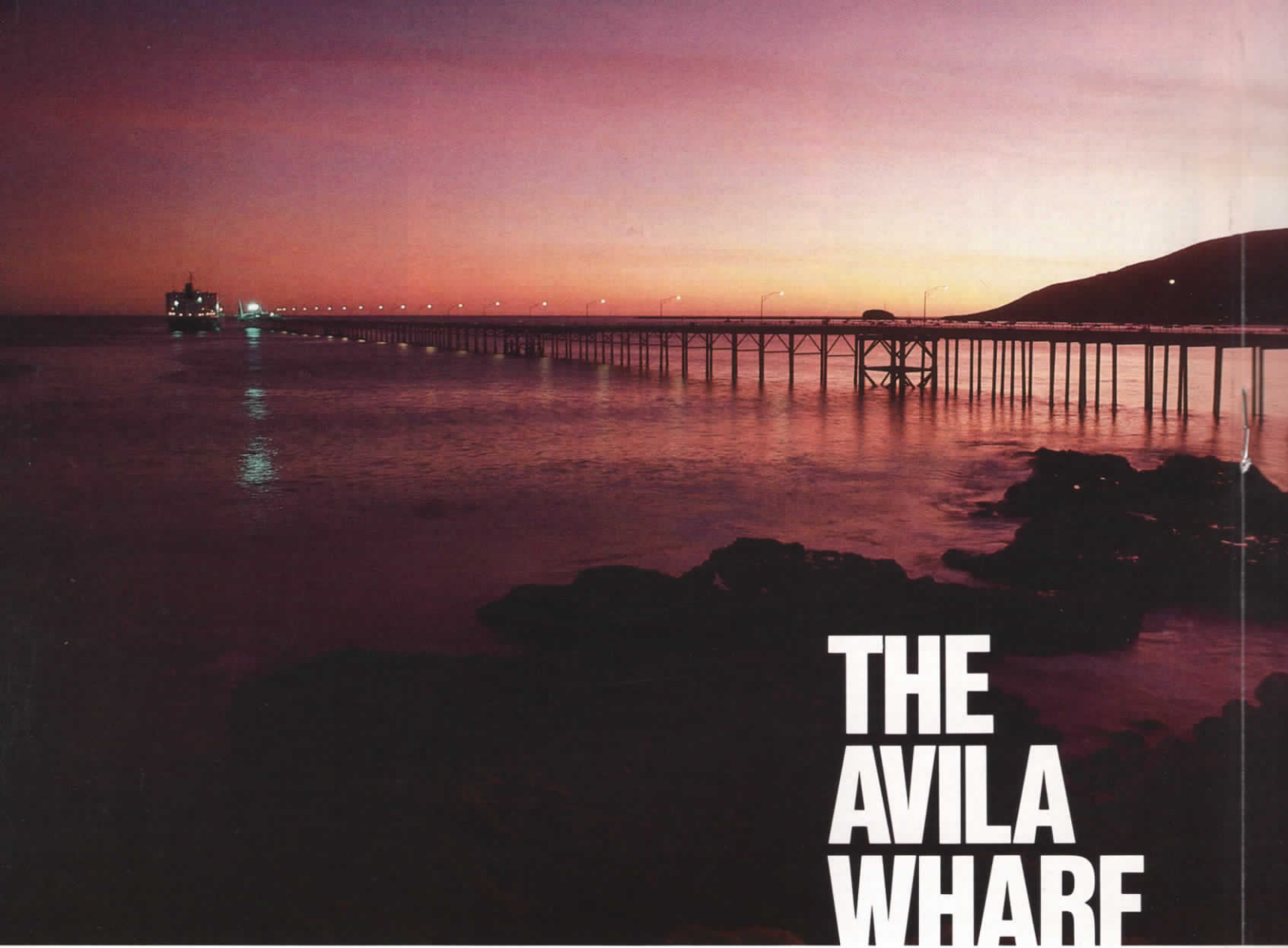
Many of the catalysts used in Union's hydrocracking technology were invented by Dr. John Ward, staff consultant, Science and Technology Division.

Ward, who joined Union Oil in 1963, will receive a prestigious award for his work this March: the Eugene J. Houdry award in Applied Catalysis, bestowed biennially by the Catalysis Society of North America. The award brings with it a plaque and a prize of \$3,000.

The purpose of the Houdry award is to recognize and encourage individual contributions in the field of catalysis, with emphasis on the development of new and improved catalysts and processes representing outstanding advances in their useful application. Selection is made by a committee of renowned scientists and engineers.

"Dr. Ward's work has advanced both academic and industrial science," says Dr. Kess Alley, vice president, Refining and Products Research Department, who nominated Ward for the prize. "He has invented many catalytic materials which have found wide application in the industrial world, and his work has permitted Union Oil to maintain and expand its position of world leadership in hydrocracking technology."

Dr. Ward received his B.S. degree in chemistry at the University of Manchester (United Kingdom) in 1959; earned his master's degree there the following year, and received a Ph.D. at Trinity College, Cambridge in 1962. Before joining Union Oil, he served as a postdoctoral fellow with Canada's Alberta Research Council. Dr. Ward has published 45 technical papers and has 43 U.S. patents to his credit.



THE AVILA WHARF





BACK IN SERVICE



Union's S.S. Coast Range was the first ship to dock at the new concrete and steel Avila Wharf. The old wooden wharf, built in 1914, collapsed in a storm in 1983.

Mid-December's gloomy, misty skies were an appropriate backdrop for the dedication of the new Union Oil Wharf at Avila Beach on California's central coast. The occasion was a happy one, restoring this important part of Union's Western Region Pipeline Division to full service. But the weather was a fitting tribute to the old wharf, which collapsed in stormy weather in March 1983 after 69 years of standing up to the onslaughts of the Pacific.

The cold gray day was also a chilling reminder of the longest half hour that three Union employees had ever spent in the surf. They were standing on the wharf when it went down—and they were fished out of the turbulent waters unharmed, thanks to the courage and quick-action of onlookers.

The old wharf collapsed on March 1, 1983 during one of the harshest California storms in memory. Ocean swells of 15 to 20 feet had undermined some of the wooden pilings of the 2,700-foot structure, taking a heavy toll.

"Unfortunately, we didn't know just how heavy when we went out to inspect the damage," says D.J. "Dutch" Van Harreveld, northern division pipeline superintendent. Van Harreveld, coast area supervisor Jack Spaulding, and terminal foreman Loren Woods went into the water with a 100-foot section of the wharf.

"We began to walk back to shore and had gone only a short way when I heard Dutch say, 'Here comes a big one,'" Spaulding wrote in his report to the Coast Guard. "I had no sooner heard this when I felt the pier drop out from under me?"



Right, rough seas undermined the old Avila Wharf. (Photo courtesy of the San Luis Obispo Telegram-Tribune.) Twenty months later, the new wharf began operations. Tanker loading and unloading is a round-the-clock operation. The S.S. Coast Range arrived at noon and pulled away with its cargo some 18 hours later.



Their makeshift raft (remnants of the wharf) kept getting smaller, as they kept a nervous lookout toward shore where the surf was crunching wooden pilings and other debris. They were still close enough to the wharf to be in danger if more of it collapsed. Their plan was to swim to a nearby buoy if need be.

"I asked Loren if he could swim," Spaulding wrote. "He said 'not too well,' but he was going to give it a hell of a try."

Fortunately, a boat arrived before long. Harbor District personnel and two townsmen, Bret Percival and Keith Kelsey, had witnessed the accident from the beach and raced to the rescue.

Percival and Kelsey had the larger boat, the *Paul Revere*, and so made the rescue. First, they threw life vests to the stranded Union men. Then, Kelsey maneuvered his craft between swells, being careful not to sink the makeshift raft, which by now was only about 15 feet square. Percival helped the men climb aboard.

The men had gone out to inspect the wharf about noon, well past that day's high tide at 11 a.m. The first section went down at about 12:30. The rest collapsed soon after, pilings falling like a row of dominoes. By dawn the next day, the wharfhead, a structure about 150 by 400 feet, was also gone. Only the "dolphin," a 25-ton concrete structure to which tankers moored, was left.

Built in 1914, the old Avila Wharf at first handled dry cargo for the Pacific Coast Coal and Railroad Company. Union leased the wharf and began shipping oil from it in 1920, running the crude or product in and out on narrow gauge rail lines before pipelines were installed.

Union has been a presence on the central California coast since the company's founding in 1890. In 1906, a six-inch pipeline was completed that carried oil from Orcutt Oil Field in Santa Barbara County to Port Harford (now Port San Luis). The company also built storage tanks there with a combined capacity of 250,000 barrels.



In 1910 the company built a 10,000-barrel refinery at Port Harford and completed an eight-inch pipeline from the San Joaquin Valley to the terminal. This pipeline carried 30,000 barrels of oil a day. (At that time, California was the country's leading oil producer.) From Port Harford, and from Union's terminal in San Pedro, tankers carried oil to the Atlantic Coast, South America and Europe.

Union purchased the wharf in 1941. Over the years, the wharf had been well-maintained. The original pipelines had been replaced with high-strength welded steel pipe, and these remained intact on the sea floor after the first section of the wharf collapsed. Quick work by Union crews in clearing these lines prevented any significant spillage.

Cleanup operations began the day after the collapse. It took more than two months for Union's crews to remove the wharf debris from the harbor.

Many alternatives were considered for replacing the wharf — while products and crude oil were shipped much more expensively. Options included relocation of the wharf and laying submarine pipelines. But the best solution was to rebuild on the same site—this time using steel and concrete. The \$25-million, 3,000-foot structure should survive anything Mother Nature can throw at it.

The first ship to dock at the new wharf arrived on the ninth of November. The *S.S. Coast Range* picked up 110,000 barrels of gas-oil bound for the Union 76 refinery in Los Angeles.

The wharf is used for loading crude oil and gas-oil, offloading feedstocks for the nearby Santa Maria refinery, and delivering refined products for distribution to customers.

In an average year, the wharf's pipelines transfer some eight to 10 million barrels of crude oil and refined products between tankers and terminal. The hillside behind the town of Avila Beach accommodates Union's tank farm, which has a storage capacity of one million barrels.

76



Tracks are evidence of dune wildlife—foxes, coyotes, bobcats, cottontails, jackrabbits and some 50 species of birds. Human inhabitants of the dunes have included the Chumash Indians and, more recently, the Depression “Dunites,” a colony of artists, writers, astrologers and others who published their own magazine, “Dune Forum.” The dunes have also provided Hollywood film crews with a local version of the Sahara Desert.

DUNES

For eons, waves and wind have carried sand to shore to form the Nipomo Dune Complex, the highest dune formations on the California coast. As the dunes moved inland, plants covered them—collecting sand in their roots, pushing their leaves up through new deposits of sand. In this way, the fertile farmland of the Nipomo Mesa was formed.

Dune formation continues today. The dune complex, containing many dunes 100 feet high, stretches 18 miles from Pismo Beach south to Point Sal. It covers some 12,000 acres, of which 3,000 are owned by the State Department of Parks and Recreation.



Union's Santa Maria Refinery and Chemical Plant border this unique natural area on the east, and the company is helping to preserve a 630-acre parcel of dune land that supports several rare and endangered plant species. Union has leased this parcel to the state to be used for public visitation and enjoyment. It is an important continuation of the Dune Lakes private reserve on its northern boundary.



The parcel also serves as a buffer zone between Union's operations and the Pismo State Vehicle Recreation Area. In 1980, the year that Union set aside the buffer zone, the company also sold an adjacent 630 acres to the state to complete an eight-mile strip of beach property for off-highway vehicle (OHV) use.

The buffer zone is protected by a program of preservation and rehabilitation of the dune vegetation, according to Bob Woehrmann, government relations manager for the Real Estate Division. "This is designed to reduce the amount of wind-blown sand from barren dunes in the buffer area," says Woehrmann, who has worked for years with governmental, recreational and environmental groups to represent Union's interests in the dunes.

Above, Gaylord Jones, who has been exploring the dunes since 1903, gives Union craftsman Pat Valente a brief botany lesson. Left, off-highway vehicles line the coastline on a sunny summer weekend.



Concern about wind-blown sand has arisen with the surge in popularity of OHVs. The dunes beckon OHV enthusiasts, but this high-octane recreation can destroy dune vegetation.

The loss of vegetation destabilizes the dunes, increasing problems with wind-blown sand settling on industrial facilities and agricultural lands further inland, Woehrmann explains.

If enough vegetation is destroyed, whole dunes could move. In some areas of the world, prevailing offshore winds have pushed sand dunes over buildings, communities and forests—leaving destruction behind.

Some measures have been taken to protect the dunes from overuse. The state has set aside nature preserves that are off limits to vehicles, and many four-wheel drive clubs are making their members aware of the importance of dune vegetation.

Dune plants are not only vital sand anchors. Highly adapted to a difficult, nutrient-poor environment, they are also an important scientific resource.

Right, Pete Noss, refinery manager, chats with Kathleen Goddard Jones, local environmentalist who leads frequent dune nature walks. Left, plants help stabilize the sand dunes. Above, surf fishing is one of many recreational attractions.

The wild beach strawberry, for example, has been used in developing cultivated varieties because of its drought tolerance, resistance to salinity and root disease, and low requirement for fertilizer. The strawberries found in the dunes, unique in their species, have been designated a rare population type by the National Council on Gene Resources.





Nipomo lupine



White marsh thistle



Crisp dune mint



Dunes Indian paintbrush



Chinese houses



Sand almond—These dune plant photos, part of Gaylord Jones' extensive collection, show some species that are both rare and endangered (top four).



Pat Valente checks the fence that separates the preserve on Union's land from the State Vehicle Recreation Park. Dune buggy tracks don't harm the bare sand but can destroy the vegetation that stabilizes the older dunes further inland.



Another plant unique to the dunes, the Nipomo lupine, is the subject of a four-year study. Once thought eradicated by off-highway vehicles, the Nipomo lupine has been rediscovered in Union's buffer zone. In 1982, three plants appeared. So far in 1985, more than 30 have been counted.

These plants, representing one of only two known Nipomo lupine populations, present some mysteries. Why do they flourish one year and fade the next on the same piece of ground? How did they return after disappearing? Answers could contribute to the solution of other agricultural puzzles.

The Nipomo Dune Complex has been listed in the National Registry of Natural Landmarks since 1980. The entry reads, in part: "No comparable area on the Pacific Coast possesses a similar series of freshwater lagoons and lakes so well preserved, with minimal cultural intrusions and harboring such great species diversity.

"The area serves as habitat for both rare and endangered plants and animals besides being one of the most scenically attractive areas in southern California."

For those interested in learning more about dune plants, one good reference is *A Flora of the Santa Barbara Region*, written by botanist Clifton F. Smith and published by the Santa Barbara Museum of Natural History. 76



Left and above, Bonnie Walters takes a census of Nipomo lupine plants. She and her husband, Dr. Dirk Walters of Cal Poly/San Luis Obispo, are conducting a four-year study of this rare and endangered species. Right, certain areas in the dune preserve have been posted to allow the vegetation to reestablish itself.



American Ingenuity

A perfect, sunsplashed morning greeted the million-plus spectators who lined the streets of Pasadena to view the 96th Tournament of Roses, held on New Years Day. The theme of this year's parade was "The Spirit of America." For the 43rd year, the company was a participant in the event, entering a float entitled "American Ingenuity." The float displayed the new Unocal logo for the first time.

Designed by Raul Rodriguez, the entry depicted a scene reminiscent of a mid-1800s industrial exposition. The float featured several formally attired spectators viewing an authentically reproduced steam engine, complete with spinning gears, pumping pistons, a blowing whistle, and puffs of steam wafting up from a smokestack.

The float was built by Fiesta Floats and decorated by volunteers from the Charter Oak High School Band of Covina.

76





Fifth annual
Seventy Six
magazine
photo contest

Spirit



“Spirit” is the theme for the 1985 contest, and there are two dictionary definitions that apply. One says that spirit is a particular mood or emotional state characterized by vigor, animation and enthusiasm. Another defines spirit as the real sense of significance of something—that which inspires or enlightens.

So, apply it to people, animals or scenery. Three professional photographers will select the seven photos with the most spirit to be printed in *Seventy Six* magazine next spring.



Send to
Seventy Six Magazine
Photo Contest
Union Oil Center, M-17,
Los Angeles, CA 90051

Awards: The seven contest winners will each receive \$100, and a T-shirt.

Eligibility: Employees and retirees of Union Oil (its subsidiaries and divisions) are eligible. Their spouses and children may also enter.

Entries: Color only. No more than three per person. We prefer 35 mm. slides. If you send prints, please mount them on stiff board. To compete successfully against color slides, prints should be no smaller than 8 by 10 inches.

Mailing: Please package your entries carefully, making sure they are identified so that they can be returned to you.

Liability: All entries are to be submitted with the understanding that neither Union Oil Company nor any of its employees will be held responsible or liable for loss or damage. Entries may be held beyond the publication date of the contest, but we will attempt to return all of them.

Right to publish: Union Oil retains the right to publish or republish any photograph submitted in the contest. Entrants waive any claims for royalty payments or copyright infringement.

Model release: Entrants must be able to furnish a written “consent to use” statement upon request for recognizable people appearing in the photographs.

Judging: Three professional photographers from outside the company will judge the contest. Their decision will be final.

Deadline: Entries should reach the magazine office at Union Oil Center in Los Angeles by Monday, April 1, 1985.

Entry Form (please print)

Name of employee/retiree: _____

Job Title: _____ Division/Subsidiary: _____

Work location: _____

Telephone: _____ Network: _____

Name of entrant (if different): _____

Relationship to employee: _____

Home address: _____

City: _____ State: _____ Zip: _____ Phone: _____

Title or description of photos—attach separate sheet if necessary: _____

Important! I have read and agree to the contest rules.

Signature: _____ Date: _____

If under 18, signature of parent or guardian: _____



CORPORATE

January 1985

- 35 YEARS Cecil P. Fleming, Beaumont Refinery
Jack Houghton, Union Oil Center
Allan W. Percy, Union Oil Center
Clyde E. Rhodes, Schaumburg, Il.
W.D. Wallace, Union Oil Center

- 30 YEARS Lydmyla Nimciv, Union Oil Center

- 25 YEARS George I. Ozaki, Union Oil Center
Wilma L. Smith, Union Oil Center

- 20 YEARS Harold P. Shawlee,
Union Oil Center

- 15 YEARS Paul M. Corley, Union Oil Center
Gordon L. Dolfie, Union Oil Center
Christy Hiruko, Union Oil Center

- 10 YEARS Cliffne F. Bateman,
Union Oil Center
Donald G. Dawson,
London, England
Cay L. Noble, Schaumburg, Il.

- 5 YEARS Tony S. Ayad, Union Oil Center
Rebeca Espinoza, Los Angeles, Ca.
David B. Ézarik, Houston, Tx.
Darline A. Miller, Union Oil Center
Jeanette T. Pfister,
Union Oil Center

February 1985

- 35 YEARS Samuel Hoover, Union Oil Center

- 30 YEARS Lucille M. Ingels, Union Oil Center

- 20 YEARS Katherine M. Lawhon,
Union Oil Center

- 10 YEARS Gilbert M. Martinez,
Union Oil Center
William A. Noyes, Union Oil Center
David K. Patterson, Burbank, Ca.

- 5 YEARS Dan E. Esberg, Union Oil Center
Marilyn Forrest, Union Oil Center
Debbie L. Gilliam,
Union Oil Center
William E. Haupt,
Union Oil Center
Ogreita D. Lawson,
Union Oil Center
Eva Leong, Union Oil Center
Stephen C. McKeand, Pasadena, Ca.
Sandra B. Reyes, Union Oil Center
S. Yvonne Scott, Schaumburg, Il.
Terrence Thayer, Schaumburg, Il.
Larry A. Waage, Orcutt, Ca.
Thaddeaus O. Wilson,
Union Oil Center
John B. Yep, Union Oil Center

UNION SCIENCE AND TECHNOLOGY DIVISION

January 1985

- 30 YEARS Robert K. Knight, Brea, Ca.

- 20 YEARS Scott M. McIrvin, Brea, Ca.

- 15 YEARS James F. Friberg, Brea, Ca.
Randolph M. LaKonski, Brea, Ca.

- 5 YEARS Douglas Cameron, Brea, Ca.
George A. Crawford, Brea, Ca.
Mohammad H. Ghandehari,
Brea, Ca.
Julia F. Guillen, Brea, Ca.
Candelario L. Rodriguez, Brea, Ca.
Mary C. Tobin, Brea, Ca.

February 1985

- 35 YEARS Joseph Walker, Brea, Ca.

- 25 YEARS Robert D. Furey, Brea, Ca.

- 20 YEARS Gordon W. Rimmer, Brea, Ca.

- 15 YEARS Michael W. Bell, Brea, Ca.
Mark E. Tway, Brea, Ca.

- 5 YEARS Timothy E. Beaty, Brea, Ca.
Myna E. Dare, Brea, Ca.
Sharon M. Pearson, Brea, Ca.
Christopher K. Von Kahrs, Brea, Ca.

UNION REAL ESTATE DIVISION

January 1985

- 15 YEARS Edward C. McCracken,
Union Oil Center

- February 1985

- 5 YEARS Edgar V. Tunstall, Simi Valley, Ca.

UNION 76 DIVISION

December 1984

- 30 YEARS Wayne S. Rallings, Torrance, Ca.

- January 1985

- 40 YEARS R. L. Kozoman, Chicago Refinery

- 35 YEARS Freeman L. Dickey, Savannah, Ga.
Ladonna J. Slowik, St. Paul, Mn.
Charlie L. Tompkins, Savannah, Ga.
Jerome W. Ware, Savannah, Ga.
William H. Woodruff,
Savannah, Ga.

- 30 YEARS Thomas L. Bruce, Atlanta, Ga.
George A. Griffith, Schaumburg, Il.
David E. Houck, Portland, Or.
Paul R. Hudimac, Cleveland, Oh.
Jay C. McMullan, Schaumburg, Il.
William E. Ridgeway,
Schaumburg, Il.
Robert H. Smith, Schaumburg, Il.

- 25 YEARS James P. Gabbard,
San Francisco, Ca.
Ralph M. Guenther Jr.,
Schaumburg, Il.
Thomas J. Kerans, Beaumont, Tx.
William H. Morrison, Dayton, Oh.

- 20 YEARS Murphy S. Carr, San Francisco, Ca.
Kerrick D. Cowell,
San Francisco, Ca.
Milford D. Hodges,
San Francisco, Ca.
Edwin T. Kido, Honolulu, Hi.
Dwight Lee, Santa Maria, Ca.
Julia E. Rediske, Seattle, Wa.
Barbara L. Schneidwind,
Schaumburg, Il.
Clarence W. Schoenbeck,
Schaumburg, Il.

- 15 YEARS Donald K. Binner, Chicago Refinery
Alma J. Caraway, San Francisco, Ca.
Jean A. Gillock, Schaumburg, Il.
Newey F. Kearney, Chicago Refinery
James F. Lasneski, Atlanta, Ga.
John D. Matthews,
San Francisco, Ca.
Angela Olson, Schaumburg, Il.
Robert E. Reed, South Holland, Il.
Wayne A. Sawyer, Columbus, Oh.
Phyllis T. Smith, San Francisco, Ca.
Albert L. Washington,
Los Angeles, Ca.
Thomas M. Wood, Chicago Refinery

- 10 YEARS Ruth Alvarez, Schaumburg, Il.
Darvin R. Awe, Houston, Tx.
Edward E. Banker, Savannah, Ga.
Steven M. Bright, Denver, Co.
John E. Johnson, Columbus, Oh.
Scott P. Leibert, Schaumburg, Il.
Mark A. Lindstrom,
Schaumburg, Il.
Dorothy J. Moody, San Diego, Ca.
Melton L. Powell,
Pure Transportation Co., Van, Tx.
Juana M. Ramirez, Schaumburg, Il.
Riano J. Santos, Schaumburg, Il.

5 YEARS **Giordani B. Acu**, San Francisco, Ca.
Michael Chang, Honolulu, Hi.
Richard R. Collard, Schaumburg, Il.
Alan J. Flagg, Denver, Co.
Richard C. Gossett, San Diego, Ca.
George K. Holland, Athens, Ga.
Adriana A. Jensen, Los Angeles, Ca.
Ramon D. Lamboglia,
 San Francisco, Ca.
Duane N. Larker, Los Angeles, Ca.
Charles Licitra, San Francisco, Ca.
Timothy R. Loose, Seattle, Wa.
Carole I. Murray, Beaumont, Tx.
Miguel A. Oropeza,
 Los Angeles, Ca.
James D. Porter,
 Pure Transportation Co., Patoka, Il.
Kris R. Rittger, San Diego, Ca.
Gary Rucker, Santa Maria, Ca.
Ana M. Salazar, Los Angeles, Ca.
Dennis L. Shigeno,
 San Francisco, Ca.
Ronald W. Smolka, Chicago Refinery
Emiliana I. Spooner,
 San Francisco, Ca.
Betty A. Stanford,
 San Francisco, Ca.
Randy R. Swenson, Schaumburg, Il.
Richard D. Tackett, Eugene, Or.
Danny K. Taketa, San Francisco, Ca.
John Taylor, Tallmadge, Oh.
Danilo E. Urrutia,
 San Francisco, Ca.
Kimberly R. Vincent, Pure
 Transportation Co., Houma, La.
Rowena Yeung, San Francisco, Ca.
Daniel M. Young, San Francisco, Ca.
Hung N. Yuk, San Francisco, Ca.

February 1985

35 YEARS **John M. Scott Jr.**, Memphis, Tn.
William T. Sherar, San Diego, Ca.
 30 YEARS **Herman Abeloe**, Santa Maria, Ca.
Raymond F. Billburg,
 San Diego, Ca.
Earl D. Childers, Santa Maria, Ca.
Richard F. Daly, Cleveland, Oh.
John R. Kirkland, Schaumburg, Il.
Robert Knotts, Santa Maria, Ca.
Natalie P. Mead, San Francisco, Ca.
Roy Streetman, Santa Maria, Ca.
 25 YEARS **Robert W. Nelson**, Schaumburg, Il.
 20 YEARS **James E. Dowell**, Los Angeles, Ca.
Robert N. Lee, Pensacola, Fl.
John F. McCasland,
 Los Angeles, Ca.
Jerry R. Oyler, Orange, Ca.

15 YEARS **Michael Baer**, Schaumburg, Il.
Lorhermy R. Branman,
 Los Angeles, Ca.
Michael D. Campbell,
 Chicago Refinery
James A. Carnahan,
 Chicago Refinery
Giocondino Damico,
 Chicago Refinery
Gay P. Donovan, Savannah, Ga.
John E. Ferry, Chicago Refinery
Conchita A. Fonseca,
 San Francisco, Ca.
Ruby M. Fowler, San Francisco, Ca.
Lloyd L. Gardner, Los Angeles, Ca.
Daryl B. Keene, Chicago Refinery
Anthony P. Lewis, Chicago Refinery



Consuelo I. Loville,
 San Francisco, Ca.
Eleanor G. Marzillo,
 Schaumburg, Il.
Bobby D. Mayhew, Schaumburg, Il.
Arnold L. Osborne, Savannah, Ga.
John E. Pardo, Chicago Refinery
Carmela L. Rotola, Schaumburg, Il.
Patrick E. Siegel, Chicago Refinery
Bruce W. Spittal, Chicago Refinery
Daniel R. Walwark,
 San Francisco, Ca.
Leroy Williams, Savannah, Ga.

10 YEARS **Dennis E.J. Bernier**, Beaumont, Tx.
Donald R. Garden, Tampa, Fl.
Margie J. Gibson, Memphis, Tn.
Michael J. Hodor, Chicago Refinery
Kurt A. King, Los Angeles, Ca.
Robert D. Mahlstedt,
 San Diego, Ca.
Rodolfo U. Rivera, Los Angeles, Ca.
Ruth Widmark, Schaumburg, Il.

5 YEARS **Gary L. Andrews**, San Francisco, Ca.
James N. Badger, Los Angeles, Ca.
Ronald D. Brereton, Tampa, Fl.
Jean D. Britton, South Holland, Il.
Mark R. Campbell, Los Angeles, Ca.
Coleman W. Conroy, Beaumont, Tx.
Aurora Contreras, Schaumburg, Il.
Christine Dillon, Orange, Ca.
Scott T. Fisher, Portland, Or.
Teresa A. Hendricks, Tampa, Fl.
Pacita Olay, San Francisco, Ca.
Judith A. Peters, Schaumburg, Il.
Meyer I. Stansberry, San Diego, Ca.
Michael B. Strong, Wildwood, Fl.
William S. Thomas, Cerritos, Ca.
Steven A. Tomasco,
 San Francisco, Ca.
Joan M. Wada, San Francisco, Ca.
Blanche I. West, Schaumburg, Il.

UNION OIL AND GAS DIVISION

January 1985

40 YEARS **N.E. Clark Jr.**, Van, Tx.
Neill Morris, Van, Tx.
 35 YEARS **Travis G. Jackson**, Houston, Tx.
Daniel Mitchell, Houston, Tx.
 30 YEARS **Allen R. Hauck**, Pasadena, Ca.
Benjamin F. Winch, Lafayette, La.
 25 YEARS **James H. Bonner Jr.**, Houma, La.
Merle D. Dickens, Lovington, N.M.

15 YEARS **Floyd G. Delahoussaye**,
 Lafayette, La.
Dennis K. Mishina, Pasadena, Ca.
Burton D. Porche Sr., Houma, La.
Richard L. Stewart, Anchorage, Ak.
David E. Thompson, Pasadena, Ca.
Claudelle M. Whitesell,
 Lafayette, La.

10 YEARS **David O. Condon**, Orcutt, Ca.
Julius J. Gregoire, Lafayette, La.
Eddie V. Martinez, Andrews, Tx.
Frank P. Nave Jr., Lovington, N.M.

5 YEARS **Jerry T. Alexander**, Odessa, Tx.
Vernon H. Cash, Ventura, Ca.
James R. Chapman Jr., Orcutt, Ca.
Robert B. Gamble, Houston, Tx.
James B. Green, Houston, Tx.
William E. Hardy,
 Santa Fe Springs, Ca.
Gerald J. Naquin Sr., Houma, La.
Mark W. Nulle, Worland, Wyo.
Joyce D. Oldham, Andrews, Tx.
Kurt E. Pizalate, Houston, Tx.
Trevlon J. Renard, Lafayette, La.
Ingus A. Richters, Pasadena, Ca.
Roy D. Roberts, Ventura, Ca.
Johnny T. Santiago, Anchorage, Ak.
Gary D. Simmermaker, Orcutt, Ca.
Tejap M. Simpson, Snyder, Tx.
Hubert J. Sullivan, Mobile, Al.
Felicia Y. Yu, Pasadena, Ca.

February 1985

35 YEARS **George W. Elliott Jr.**, Pasadena, Ca.
Aquilla O. Fleetwood, Andrews, Tx.

30 YEARS **Ronald J. Cernik**, Houston, Tx.
Jeanne J. Hain, Pasadena, Ca.

25 YEARS **Houston B. Badon**, Lafayette, La.
Herman C. Burrough,
 Oklahoma City, Ok.
Floyd R. Mullins, Santa Paula, Ca.

20 YEARS **Wayne H. Erickson**, Orcutt, Ca.

15 YEARS **O. C. Neal Birchfield**,
 Anchorage, Ak.
Roy Calloway Sr., Houma, La.
James H. Dillard, Odessa, Tx.
Phillip E. Hosch, Orcutt, Ca.
Bruce C. Longest, Orcutt, Ca.
Lorne D. McCluskey, Midland, Tx.
P. E. Parfait, Houma, La.
Johnny P. Rivas, Orcutt, Ca.
Dwayne J. Smith, Santa Paula, Ca.
Anthony N. Stewart, Houston, Tx.

10 YEARS **Harold J. Frederick**, Lafayette, La.
Calvin L. Guidry Sr., Houma, La.
Clyde D. Guillotte, Lafayette, La.
Reedy D. Hall, Santa Fe Springs, Ca.
Michael E. Lucero, Ventura, Ca.
James H. Weaver, Anchorage, Ak.

5 YEARS **Leland D. Alba**, Moab, Ut.
Janice N. Angus, Houston, Tx.
Brian R. Baca, Ventura, Ca.
Vicki L. Breaux, Houma, La.
Dennis D. Conley, Bakersfield, Ca.
Renee E. Crosby, Houston, Tx.
Dale A. Hoffman, Bakersfield, Ca.
Pamela D. Jackson, Houston, Tx.
Kirk D. Kiloh, Anchorage, Ak.
Brian P. Pitts, Bakersfield, Ca.
Mark S. Schmiedeke,
 Anchorage, Ak.
Jennie J. Settegast, Houston, Tx.

UNION GEOTHERMAL DIVISION**April 1984**25 YEARS **Olin D. Whitescarver**,
Imperial Valley, Ca.5 YEARS **Simion L. Agustin**,
Imperial Valley, Ca.
John M. Curtis, Imperial Valley, Ca.
Earnest W. Higgins,
Imperial Valley, Ca.
Robert Kadry, Imperial Valley, Ca.
Danny W. Miller,
Imperial Valley, Ca.
Leopoldo O. Rodriguez,
Imperial Valley, Ca.**May 1984**5 YEARS **Kurt Blickensderfer**,
Imperial Valley, Ca.
Jose M. Perez, Imperial Valley, Ca.
Charles W. Stephens,
Imperial Valley, Ca.**June 1984**20 YEARS **Walter E. Nellis**, Imperial Valley, Ca.**January 1985**25 YEARS **Ronald R. Veaudry**,
Manila, Philippines15 YEARS **Steven J. Maione**, Tokyo, Japan5 YEARS **Charles W. Burch**,
Imperial Valley, Ca.
Warren L. Canfield, Big Geysers, Ca.
Jack M. Crawford,
Imperial Valley, Ca.
Julio F. Deluna, Imperial Valley, Ca.
Patrick S. Dobrocke,
Manila, Philippines
Victor A. Gillespie Jr.,
Imperial Valley, Ca.
Ronald A. Kesler, Big Geysers, Ca.
Jim C. Messick, Imperial Valley, Ca.
Leon F. Pope, Imperial Valley, Ca.
Manuel J. Ramos, Big Geysers, Ca.
Miguel G. Rodrigo,
Imperial Valley, Ca.
Joseph S. Tapia, Imperial Valley, Ca.
Wai-Ming Wong, Union Oil Center**February 1985**20 YEARS **Walter Schroeter**, Santa Rosa, Ca.15 YEARS **Janice M. Peacha**, Union Oil Center10 YEARS **Blackie L. Halbrook**,
Manila, Philippines
Michael L. Shoaff, Santa Rosa, Ca.5 YEARS **Constance S. Henderson**,
Union Oil Center
Paul E. Holmes, Imperial Valley, Ca.
Daryl J. Honey, Big Geysers, Ca.
Edward E. Keppel, Santa Rosa, Ca.
Dale R. McKean, Big Geysers, Ca.
David G. Newell,
Imperial Valley, Ca.**PHILIPPINE GEOTHERMAL, INC.****January 1985**5 YEARS **Domingo C. de los Santos**, Manila**February 1985**10 YEARS **Leila Mae R. Medina**, Manila5 YEARS **Quirino S. Kolimlim**, Manila
Idefonso G. Martinez, Manila
Loreto L. Nora, Manila
Teresita H. Vloria, Manila**UNION CHEMICALS DIVISION****January 1985**25 YEARS **Melvin R. Lounsbury**,
Kansas City, Mo.15 YEARS **William H. Kiley**, Rodeo, Ca.
Frank T. McSwain, Tucker, Ga.10 YEARS **Charlie Brown**, Wilmington, Ca.
Darlene R. Gonyo, Schaumburg, Il.
Amaryllis F. Medeiros,
Schaumburg, Il.
Larry S. Morgan, Brea, Ca.5 YEARS **Dan H. Caldwell**, Charlotte, N.C.
Raymond W. Caudell, Lemont, Il.
James T. Esswein, Union Oil Center
Albert R. Frevele, Rodeo, Ca.
Steven D. Gill, Houston, Tx.
Thomas K. Haight, Clark, N.J.
Michael S. Hardison, Nashville, Tn.
Eric H. Hunger, Schaumburg, Il.
Karen L. Prigge, Schaumburg, Il.
James H. Roberts, Charlotte, N.C.
Glen Ventrone, Union Oil Center**February 1985**30 YEARS **Gerald E. Hendrixson**, Wichita, Ks.25 YEARS **Charles F. Merrill**, Union Oil Center
F. Dean Wagner, La Mirada, Ca.20 YEARS **Harvey E. Coghlan**,
W. Sacramento, Ca.
Freda H. Frazier, Charlotte, N.C.
Adrian L. Hale, Yakima, Wa.
Eric J. Holmader,
E. Providence, R.I.10 YEARS **Ronald D. Freston**, Schaumburg, Il.
Clarence L. Johnson, Kenai, Ak.
Stephen A. Morgan, Kenai, Ak.
Sharon L. Stephens, Bridgeview, Il.5 YEARS **Nina Azadian**, Union Oil Center
Robert L. Bell, Kenai, Ak.
Stephen C. Cooper, Charlotte, N.C.
David W. Eldredge, Kenai, Ak.
Jerry L. Fate, Kenai, Ak.
Robert L. Grisson, Charlotte, N.C.
Ronald B. Hansen, Kenai, Ak.
Mark A. Hardy, Beaumont, Tx.
William L. Hawkins, Kenai, Ak.
Michael C. Holland, Kenai, Ak.
Charles Kahakauwila, Kenai, Ak.
Bruce K. Livingston, Lemont, Il.
Joseph C. Moles, Lemont, Il.
Mark B. Moore, Kenai, Ak.
Gabriel G. Moreno, Brea, Ca.
David J. Pedigo, Lemont, Il.
George E. Reichardt, Lemont, Il.
Teri L. Waters, St. Paul, Mn.**UNION INTERNATIONAL OIL DIVISION****January 1985**10 YEARS **Michel R. Estachy**,
Aberdeen, Scotland
Denise Hallis, Los Angeles, Ca.5 YEARS **Susan Addis**, Los Angeles, Ca.
Michael C. Hankins,
London, England
Warren A. Mautz, London, England
Alan D. Pinkerton, Los Angeles, Ca.
Ruth K. Richardson,
Los Angeles, Ca.
Douglas E. Thomas,
Balikpapan, Indonesia**February 1985**20 YEARS **Donald N. Kay**, Los Angeles, Ca.15 YEARS **William G. Reay**,
Balikpapan, Indonesia10 YEARS **John C. Ellice-Flint**, Norway
Stephen E. Foster, Los Angeles, Ca.
Petrus I. Garbenis,
London, England5 YEARS **Martin C. Fernandez**,
Los Angeles, Ca.
Darrell J. Kamm,
Balikpapan, Indonesia
Thomas E. Stump,
London, England**UNIONOIL CO. OF GREAT BRITAIN****January 1985**5 YEARS **Shirley Creed**, London
Francine Day, London
Brain Galvin, Aberdeen
Michael Llewellyn, Aberdeen
John McGaw, Aberdeen
Michael Phelan, Aberdeen
Ian Young, Aberdeen**February 1985**5 YEARS **Adrian Allan**, Aberdeen
Derek Bambury, Aberdeen
Michael Bergin, Aberdeen
Douglas Bissett, Aberdeen
Daniel Bradley, Aberdeen
Jeremy Brewin, Aberdeen
David Darroch, Aberdeen
James Duff, Aberdeen
Douglas Farr, Aberdeen
Maldwyn Jones, Aberdeen
Margaret Jones, London
William Keeling, Aberdeen
John Mair, Aberdeen**UNION OIL CO. OF INDONESIA****January 1985**15 YEARS **Zarkani Abdarisman**10 YEARS **Abubakar**
Eddy Dharmawan
Djohansjah
Pudjo Hartono
Sujindro Mulyono
Rasno
Rambat Riyadi
Soedarso
Soewanto
Olga E. Sumarandak
Tohirwidjaja

5 YEARS Yuswo Basuki
Noersasi
Sadjino
Subagiyono
D. Supramono

February 1985

10 YEARS Yan Kodoati
Harto Kuntardi
Ingeten Sembiring Maha
Max Mandagi
Victor Brutje Oroh
Budi Santoso
Dorotheus Tenda

5 YEARS Leo Hartono
Johny Marto Lintang
Sumar Mahadi
Mudjijo
Selamat Pasaribu
Abdul Rahim Saka
Samsulisty
Ramson Sihaloho
R. Sularso
Soetarto Taroenawidaya
Achmad G. Winterstei

UNION OIL OF THE NETHERLANDS

January 1985

5 YEARS Johan Houtzager

UNION OIL LIMITED—SINGAPORE

February 1985

10 YEARS Mohd Maideen bin Sulaiman

5 YEARS Joseph Tan Thiang Hua

UNION OIL SUEZ

January 1984

10 YEARS Azza Osman
Nazih Tewfik

October 1984

10 YEARS Hussein Saley

UNION OIL CO. OF THAILAND

January 1985

10 YEARS Jerry R. Kukula
Fred Sander

5 YEARS Sampao Deerot
Michael J. Pomfret

February 1985

15 YEARS Donald R. Tyler

5 YEARS Puttikorn Charoenmitr
Chariwal Kriangkriwanich
Christopher J. Platt
Nara Rongdechprateep
Suvit Sararaks
Sirima Taveesat

UNION OIL CO. OF CANADA LTD.

January 1985

15 YEARS Kenneth L. Shaw, Calgary, Alta.

5 YEARS Garry L. Flaman, Red Earth, Alta.
Sandy L. Fry, Calgary, Alta.
Neil W. Stephenson, Calgary, Alta.
Martha Szonyi, Calgary, Alta.
Michael A. Woodley, Calgary, Alta.



February 1985

30 YEARS William E. Stevens, Calgary, Alta.

15 YEARS Cyril O. Ferguson, Fort St. John, B.C.
Barry R. Lundy, Calgary, Alta.

5 YEARS Helen I. Gal, Calgary, Alta.
Norman C. Parsons, Calgary, Alta.

UNION ENERGY MINING DIVISION

January 1985

5 YEARS Robert L. Meierdierks, Parachute, Co.
Dan J. Michael, Parachute, Co.
Franklin D. Shurigar, Parachute, Co.
James M. Stretch, Parachute, Co.

February 1985

35 YEARS James S. Cloninger, Parachute, Co.

25 YEARS Dale L. Roehrkasse,
Union Oil Center

5 YEARS Richard H. Maddock, Parachute, Co.

MOLYCORP, INC.

January 1985

35 YEARS Myrl R. Shuemaker, York, Pa.

20 YEARS Robert B. Brown, York, Pa.
Albert M. Vanderhoof, Nipton, Ca.

15 YEARS Carlos R. Cisneros, Questa, N.M.
Derma A. Ferralli, Washington, Pa.
Gilbert J. Garcia, Questa, N.M.
Charlie I. Gonzales, Questa, N.M.
Richard S. Tafoya, Questa, N.M.

5 YEARS Anders S. Bjorklund, Questa, N.M.
Jimmy E. Duran, Questa, N.M.
Maria R. Manzanara, Questa, N.M.
Jean K. Martin, Union Oil Center
Michael R. Nees, Louviers, Co.
Kenneth P. Rainey, Nipton, Ca.

February 1985

15 YEARS Rosina Martinez, Questa, N.M.
Alex J. Quintana, Questa, N.M.
Silviano Sanchez, Questa, N.M.
Joe R. Vialpando, Questa, N.M.
Steve E. Vigil, Questa, N.M.
Bernabe J. Visarriagas, Questa, N.M.

5 YEARS Giles D. Barlow, Nipton, Ca.
Thomas W. Gray, Nipton, Ca.
Michael J. Hall, Louviers, Co.
James E. Ladwig, Louviers, Co.
Rudy J. Rodriguez, Nipton, Ca.
George R. Sanchez, Louviers, Co.
Tommy Segura, Questa, N.M.
Dodie M. Witham, Nipton, Ca.

POCO GRAPHITE, INC.

January 1985

15 YEARS Dorothy L. Gauntt, Decatur, Tx.

10 YEARS Gene E. Jones, Decatur, Tx.

5 YEARS Cornelius M. Anding, Decatur, Tx.

February 1985

10 YEARS Larry D. Fiel, Decatur, Tx.

5 YEARS Carolyn S. Peterson, Decatur, Tx.

JOBBERS AND DISTRIBUTORS

November 1984

10 YEARS T.W. Bushey and Clark Springer,
Fairbanks, Ak.

January 1985

60 YEARS Marlette Oil & Gas Company,
Marlette, Mi.

55 YEARS Herchel Webb, Napa, Ca.

45 YEARS Brown Oil Company, Wilson, N.C.

30 YEARS Gibson Oil Company,
Columbia, Tn.

25 YEARS Busy Bee Oil Company,
Pine Level, N.C.

20 YEARS Allen Martin, La Crosse, Wa.

15 YEARS John A. Dobrinen, Quincy, Ca.
Elliott Gas & Oil Company,
Gladwin, Mi.

Hinton Oil Company, Inc.,
Live Oak, Fl.

Hinton Oil Company of Georgia,
Valdosta, Ga.

Lammers & Gerding, Ottawa, Oh.

New Paris Oil Company,
New Paris, Oh.

Riggs Oil Company,
Big Stone Gap, Va.

Shelby Service, Inc., Greenfield, In.
Whitfield Oil Company,
Chickamauga, Ga.

10 YEARS Dyball Oil Company, Vincennes, In.
E. Eugene Fiedler, Mt. Vernon, Wa.
Service Oil Company of Monroe,
Inc., Monroe, N.C.

D.R. Sheppard Oil Company, Inc.,
Laurel, Ms.

Theodore M. Smith, Petersburg, Ak.

5 YEARS S & J Union 76, Charles City, Ia.
T.W. Shaw Oil Company, Inc.,
Milwaukee, Wi.

February 1985

30 YEARS Gould Oil Company, Hazel, Ky.
McElroy, Inc., Waynesville, N.C.

25 YEARS R.G. Morrison, Placerville, Ca.

20 YEARS C. Parker Oil Company, Inc.,
Ashville, N.C.

Stubbs Union 76 Oil Company,
Inc., Statesboro, Ga.

10 YEARS Lake Shore Oil & Tire Company,
Two Rivers, Wi.



RETIREMENTS

October 1984

Delfino L. Ortiz,
Molycorp, Questa, N.M., June 17, 1969

November 1984

Francis J. Barker, Oil & Gas Division,
San Marino, Ca., June 23, 1947
Patrick H. Carroll, Union 76 Division,
Beaumont, Tx., April 14, 1949
Harry L. Gordon, Union 76 Division,
Anchorage, Ak., May 17, 1954
Theresa C. Kamichoff, Union Chemicals
Division, Carteret, N.J., June 5, 1961
Virginia O. Lawson, Union 76 Division,
Mt. Prospect, Il., March 27, 1973
Gordon Taylor, Union 76 Division,
Garden Grove, Ca., September 3, 1957

December 1984

George G. Bernard, Science & Technology,
La Mirada, Ca., January 9, 1945
John F. Blazeovich, Union 76 Division,
Seattle, Wa., October 24, 1951
Beulah Bouck, Science & Technology,
Corona, Ca., August 7, 1950
Carl B. Bowden, Corporate, Costa Mesa, Ca.,
February 27, 1941
Chester R. Burkhalter, Union 76 Division,
Nederland, Tx., March 4, 1953
Mike Fiorentino, Union 76 Division,
Hayward, Ca., March 15, 1954
George J. Gordon, Union 76 Division,
Rancho Cordova, Ca., March 19, 1951
Loren E. Grimes, Union 76 Division, Noble, Il.,
June 1, 1954
Robert H. Hall, Union Chemicals Division,
Kenai, Ak., March 15, 1976
Jack R. Hannaman, Corporate, Fullerton, Ca.,
May 27, 1942
William W. Henry, Oil & Gas Division,
Midland, Tx., February 16, 1953
Norman W. Lambert, Science & Technology,
Yorba Linda, Ca., June 2, 1947
Elena Mercurio, Union Chemicals Division,
Cranston, R.I., April 10, 1967
Melvin Miller, Union 76 Division,
San Pablo, Ca., January 15, 1952
Stephen J. Ostafin, Union 76 Division,
Lockport, Il., August 1, 1954
Norman E. Peterson, Union 76 Division,
Hasting, Mn., September 18, 1953
Ann Russell, Union 76 Division, Algonquin, Il.,
April 1, 1967
Richard M. Scamman, Corporate, Whittier, Ca.,
July 28, 1948
LaDonna J. Slowik, Union 76 Division,
Columbia Hts., N.M., January 12, 1950
Gerould H. Smith, Science & Technology,
Santa Ana, Ca., July 1, 1940

Horace D. Tupper, Union 76 Division,
Long Beach, Ca., August 2, 1954
Philip L. Vaughan, Union 76 Division,
Nipomo, Ca., June 6, 1967

January 1985

M.M. Ardizzone, Union 76 Division,
San Jose, Ca., April 19, 1954
Sam Bodzin, Union 76 Division,
Studio City, Ca., April 7, 1941
George W. Borman, Union 76 Division,
Lockport, Il., March 29, 1940
Melvin P. Bowers, Union 76 Division,
Ravenna, Oh., March 17, 1952
Leslie R. Bradshaw, Union 76 Division,
Beaumont, Tx., December 28, 1948
William Brooks, Oil & Gas Division,
Lake Elsinore, Ca., January, 23, 1950
Raymond T. Burns, International, Arcadia, Ca.,
April 16, 1953
John C. Bustle Jr., Union 76 Division,
Tucker, Ga., April 1, 1946
William R. Callahan, Union 76 Division,
Rodeo, Ca., May 11, 1951
Richard Cameron, Union 76 Division,
Bishop, Ca., December 18, 1952
Roy J. Chapman, Union 76 Division,
Heath, Oh., May 1, 1956
Virginia B. Cline, Union 76 Division,
Belle, W.V., January 21, 1948
Roland F. Deering, Science & Technology,
Brea, Ca., July 7, 1941
Edward Edwards, Union 76 Division,
Carson, Ca., May 14, 1947
Caleb D. Elliott Jr., Corporate, Pasadena, Ca.,
October 16, 1950
Walter O. Erickson, Union 76 Division,
Beaumont, Tx., June 7, 1948
Ronald L. Foster, Union 76 Division,
Anaheim, Ca., June 4, 1946
Asher B. Furby Jr., Union 76 Division,
Nederland, Tx., July 6, 1948
Charles E. Gardner, Corporate, Whittier, Ca.,
June 8, 1943
William G. Gibbs, Union 76 Division,
Beaumont, Tx., July 7, 1949
James W. Gibson, Union 76 Division,
Beaumont, Tx., July 18, 1949
James L. Glass, Union 76 Division,
Nederland, Tx., June 29, 1953
William G. Gross, Science & Technology,
Fullerton, Ca., May 14, 1956
Edmund D. Haube, International,
Bellefonte, Pa., February 1, 1974
Harvey Hennig, Science & Technology,
Fullerton, Ca., July 1, 1941
Willis E. Hobbs, Oil & Gas Division,
Houston, Tx., August 17, 1954
Vance R. Kesler, Union 76 Division,
Seaford, De., January 15, 1952
Edward J. Kolenc, Union 76 Division,
Joliet, Il., July 14, 1952
Hans Kolff Van Oosterwijk, Union 76 Division,
Naperville, Il., September 18, 1950
Eleanor M. Krebel, Union 76 Division,
Cleveland, Oh., April 22, 1954
Lawrence R. Landry, Union 76 Division,
Port Neches, Tx., October 29, 1951
Leonard A. Lebold, Union 76 Division,
Granville, Oh., July 27, 1942

Michael Levanich, Union 76 Division,
Lockport, Il., July 28, 1952
Donald R. Malone, Oil & Gas Division,
Wofford Hts., Ca., April 23, 1954
William E. McKinnon, Union 76 Division,
San Francisco, Ca., February 1, 1967
Alton T. McNeil, Oil & Gas Division,
Santa Maria, Ca., October 10, 1945
Mary Merva, Union 76 Division,
Columbus, Oh., May 10, 1965
Mary J. Morrison, Science & Technology,
Orange, Ca., February 23, 1960
David E. Murphy, Union 76 Division, Joliet, Il.,
June 11, 1941
James O. Nixon, International,
Santa Maria, Ca., July 26, 1950
Herbert C. O'Brien, Union 76 Division,
Palos Verdes, Ca., June 3, 1946
Robert R. Parker, Union 76 Division,
Palatine, Il., April 7, 1952
John R.C. Phillip, Corporate, Torrance, Ca.,
October 21, 1948
John R. Pownall, Corporate, Long Beach, Ca.,
July 1, 1940
William F. Robertson Jr., Oil & Gas Division,
Casper, Wyo., May 28, 1951
William H. Saunders, Union 76 Division,
Beaumont, Tx., March 29, 1948
Paul H. Schlett, Union 76 Division,
Beaumont, Tx., January 27, 1953
E. Eugene Schultz, Union 76 Division,
Flintbridge, Ca., July 4, 1951
Ruth M. Schultz, Union 76 Division,
San Pedro, Ca., March 22, 1953
Earl E. Skonberg, Science & Technology,
Brea, Ca., October 14, 1946
Edward J. Slibeck, Union 76 Division,
Wilmington, De., September 11, 1952
Walter R. Smith, Union 76 Division,
Jacksonville, Fl., February 1, 1951
Edward G. Souza, Union 76 Division,
Vallejo, Ca., April 8, 1946
Patricia R. Spears, Union 76 Division, Davis, Il.,
February 13, 1961
Virginia M. Vinci, Union 76 Division,
San Francisco, Ca., January 25, 1956
Leo Walvatne, Union 76 Division, Seattle, Wa.,
September 11, 1954
Frank E. Williamson, Union 76 Division,
Seaford, De., November 7, 1962

February 1985

Anna V. Addy, Science & Technology,
Anaheim, Ca., September 11, 1944
Melvyn E. Arrp, Corporate, Marietta, Ga.,
January 1, 1969
Barker H. Davis, Union 76 Division,
Elk Grove Village, Il., November 24, 1952
Victor J. Evans, Union 76 Division,
Santa Maria, Ca., April 9, 1956
Aquilla O. Fleetwood, Oil & Gas Division,
Kermit, Tx., February 4, 1950
William E. Herrick, Union 76 Division,
Bettendorf, Ia., January 3, 1961
Quenten C. Highfield, Oil & Gas Division,
Perryton, Tx., October 4, 1945
Travis G. Jackson, Oil & Gas Division,
Houma, La., January 24, 1950
Carl D. Moore, Corporate, Onalaska, Tx.,
June 11, 1951
C. Lowell Morrill, Corporate,
Upland, Ca., January 2, 1952
Vernon J. Schexnayder, Union 76 Division,
Groves, Tx., October 7, 1948
Wilberta Wood, Union 76 Division,
Los Angeles, Ca., August 27, 1942



IN MEMORIAM

Employees

Kent Dodge, Union Chemicals Division, Edison, N.J., November 15, 1984
John J. Heller, Corporate, Placentia, Ca., August 15, 1984
Robert O. Johnson, Oil & Gas Division, Palm Desert, Ca., September 26, 1984
Randolph M. Lakomski, Science & Technology, Buena Park, Ca., December 7, 1984
Stephen F. Pecot, Oil & Gas Division, Lafayette, La., October 18, 1984
Lee J. Phillips, Union 76 Division, Orinda, Ca., December 12, 1984
Frank R. Sanchez, Union 76 Division, Joliet, Il., November 1, 1984
Robert C. Schermerhorn, Union 76 Division, Lakewood, Ca., October 15, 1984
Carl E. Wheeler, Oil & Gas Division, Oilton, Ok., October 3, 1984

Retirees

Iver A. Anderson, Union 76 Division, Duluth, Mn., November 5, 1984
Raymond Anderson, Union 76 Division, Florence, In., October 22, 1984
Clarence M. Bair, Union 76 Division, New Philadelphia, Oh., October 3, 1984
Ben F. Blanchard, Oil & Gas Division, Santa Ana, Ca., September 28, 1984
James D. Brinkerhoff, Oil & Gas Division, Worland, Wy., December 5, 1984
John G. Cassel, Molycorp, St. Petersburg, Fl., September 29, 1984
Horace E. Cattermole, Union 76 Division, Los Angeles, Ca., September 20, 1984
Raymond R. Cleone, Union 76 Division, Napa, Ca., November 8, 1984
Thomas J. Day, Union 76 Division, Beaumont, Tx., October 24, 1984
Oscar B. Deen, Oil & Gas Division, Nowata, Ok., September 26, 1984
Robert M. Dobson, Union 76 Division, Minneapolis, Mn., August 31, 1984
Roy M. Fitts, Union 76 Division, Michawaka, Wi., October 19, 1984
Alford Leroy Foster, Union 76 Division, Phoenix, Az., September 20, 1984
Audy V. Gibbs, Union 76 Division, Sebring, Fl., October 13, 1984
Henry M. Gorham, Union 76 Division, Freedom, Ca., September 30, 1984

Andrew D. Gray, Union 76 Division, Spokane, Wa., December 16, 1984
Mildred G. Gray, Oil & Gas Division, Patterson, La., October 20, 1984
Frank Gunther Jr., Union Chemicals Division, Baltimore, Md., November 4, 1984
Thomas V. Hamilton, Union Chemicals Division, Alhambra, Ca., November 4, 1984
Paul T. Haney, Union 76 Division, Mariposa, Ca., November 12, 1984
Eldred G. Hebert, Oil & Gas Division, Lake Charles, La., November 13, 1984
Thomas E. Howell, Union 76 Division, Beaumont, Tx., December 6, 1984
Theodore S. Jones, Oil & Gas Division, Midland, Tx., November 1, 1984
Thomas O.M. Jones, Union 76 Division, Oakhurst, Ca., November 4, 1984
Murray D. Joyce, Pure Transportation Co., Andrews, Tx., October 12, 1984
William A. Kay, Union 76 Division, Indian Rocks, Fl., November 13, 1984
Owen G. Kirkwood, Union 76 Division, Nederland, Tx., October 19, 1984
Albert R. Knight, Oil & Gas Division, Hobbs, N.M., September 29, 1984
Joe N. Kovaly, Union 76 Division, Big Bear City, Ca., October 16, 1984
Joseph J. Kravish, Union 76 Division, Lemont, Il., November 15, 1984
Joel R. Land, Union 76 Division, Gulf Breeze, Fl., November 26, 1984
Lawrence C. Leonard, Union 76 Division, Alameda, Ca., October 17, 1984
Henry J. Lipps, Union 76 Division, Cincinnati, Oh., October 19, 1984
Joseph C. Marco, Union 76 Division, Joliet, Il., September 25, 1984
Art A. McDougal, Union 76 Division, Red Bluff, Ca., November 3, 1984
Walter H. McEwen, Union 76 Division, Matthews, N.C., October 28, 1984
Richard A. Mead, Oil & Gas Division, Magalia, Ca., October 20, 1984
Thomas G. Miller, Oil & Gas Division, Fullerton, Ca., October 4, 1984
Jane Milne, Corporate, Santa Ana, Ca., October 30, 1984
Sam W. Mize, Union 76 Division, Nederland, Tx., September 28, 1984
Oscar C. Monts, Union 76 Division, Sour Lake, Tx., October 3, 1984
Bethel H. Morgan, Union 76 Division, Buna, Tx., November 8, 1984
Otto Muller, Union 76 Division, Minneapolis, Mn., September 20, 1984
Harold Noll, Oil & Gas Division, Sailor Springs, Il., December 13, 1984
Bland K. Parker, Union 76 Division, Robinson, Mi., October 12, 1984
Edmond J. Pitre, Union 76 Division, New Orleans, La., June 5, 1984
Albert G. Powell, Union 76 Division, Newport News, Va., October 8, 1984
Forrest V. Ragsdale, Union 76 Division, Fort Wayne, In., November 17, 1984
Herbert O. Rueckhardt, Union 76 Division, W. Chicago, Il., November 22, 1984
Leighton E. Scott, Union Chemicals Division, Wapello, Ia., September 22, 1984
Daniel H. Sensabaugh, Union 76 Division, Newark, Oh., November 6, 1984

John J. Shanahan, Oil & Gas Division, Whittier, Ca., November 17, 1984
James M. Shaw, Union 76 Division, Tavernier, Fl., September 30, 1984
Thomas B. Shepherd, Union 76 Division, Torrance, Ca., November 5, 1984
Max H. Smith, Union Chemicals Division, Libby, Mt., September 28, 1984
Lewis G. Snyder, Oil & Gas Division, Orcutt, Ca., November 17, 1984
Thomas L. Sudduth, Union 76 Division, Vallejo, Ca., October 29, 1984
Alma P. Steele, Corporate, Van Nuys, Ca., December 4, 1984
William G. Teal, Union 76 Division, Birmingham, Al., November 7, 1984
Austin Tomter, Union 76 Division, Laguna Hills, Ca., November 25, 1984
Howard S. Walker, Union 76 Division, Mableton, Ga., December 12, 1984
Henry Watson, Union 76 Division, Beaumont, Tx., October 3, 1984
Harry Y. Weir, Union 76 Division, Beaumont, Tx., November 13, 1984
Ronald A. Williams, Union 76 Division, San Luis Obispo, Ca., November 25, 1984
Frances S. Williamson, Union 76 Division, Orinda, Ca., October 7, 1984
Rolland P. Wood, Union 76 Division, Granville, Oh., November 4, 1984
Mabel Woodbridge, Corporate, Glendale, Ca., June 23, 1984
T. Lindsey Yeager, Molycorp, Washington, Pa., November 24, 1984



UNION OIL COMPANY OF CALIFORNIA
 P.O. Box 7600
 Los Angeles, California 90051

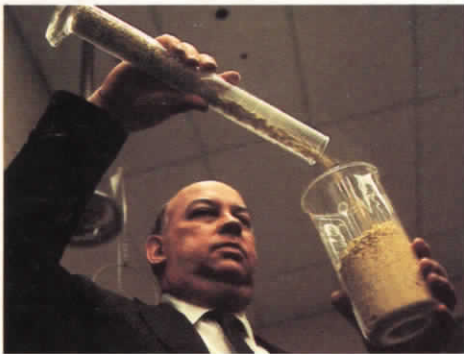
BULK RATE
 U.S. POSTAGE
PAID
 Los Angeles, CA
 Permit No. 62

GARY L FOY
 16823 LIGGETT STREET
 SEPULVEDA CA 91343 P

UNION OIL COMPANY OF CALIFORNIA

seventy SIX

VOLUME LXIV, NUMBER 1
 JANUARY/FEBRUARY 1985
 CONTENTS



17



18

This Is A Drill	Page 1
Mock crisis aboard Heather platform hones emergency response.	
Natural Gas Deregulation: Half Way There?	Page 6
No price fly-up indicated as half of domestic natural gas is deregulated.	
The World Is His Marketplace	Page 10
Union's Bill Baral discusses 25 years of Technology Sales growth.	
The Avila Wharf Back In Service	Page 18
An important link in Union's western distribution operation is restored.	
Dunes	Page 22
Union has leased 630 acres to the state of California for a nature preserve.	
American Ingenuity	Page 28
Union's Rose Parade float salutes our nation's know-how.	
"Spirit": Fifth Annual Photo Contest	Page 30
Entries due by April 1, 1985.	
Service Awards	Page 32
COVER: The Santa Maria Refinery and Chemical Plant can be seen over the tops of spectacular sand hills in California's Nipomo Dune Complex. Story on page 22.	
Published by the CORPORATE COMMUNICATIONS DEPARTMENT, Union Oil Company, Box 7600, Los Angeles, CA 90051.	
Karen Sikkema, Director, Corporate Communications; Barbara Pederson, Editor; Tim Smight, Associate Editor; Ray Engle and Associates, Art Directors.	