Seventy Six

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Natural Gas Lights Up Thailand's Energy Future

By 1985, Union Oil Company of Thailand expects to be delivering the energy equivalent of 106,000 barrels of oil per day from its offshore gas and condensate fields. This will represent 28 percent of the country's projected total energy demand.

The discovery field, Erawan, takes its name from Thai mythology. A three-headed elephant possessing special powers to combat evil, "Erawan" often aided Thai kings in defending their society. In a real sense, the Erawan gas and condensate field serves a similar purpose — providing the country with its first domestic hydrocarbon resource, which is used to fight the economic demon of dependence on high-priced oil imports. (The name Erawan was chosen by Ray A. Burke, senior vice president for Energy Resources, who directs all phases of the project.)

"It is an extremely complex development project," says Dr. Harold (Hal) Lian, president of Union Oil Company of Thailand. A high level of computerization of operations helps manage this ambitious project, and Union of Thailand uses the most sophisticated 3-D seismic interpretation program in the company to guide exploration and development of the resource. The project is Union Oil Company of California's largest to date in terms of capital investment.

It began simply enough in 1962 when Union became the first oil company awarded exploration rights in the Kingdom of Thailand. This concession was onshore on the Khorat Plateau. In 1968, the company was awarded concessions in the Gulf of Thailand, where Union is the operator and now holds the major interest in four blocks. Its co-concessionaires are the Southeast Asia Petroleum Exploration Company (SEAPEC) and Mitsui Oil Exploration Company (MOECO).

Thailand entered its "hydrocarbon age" in 1972 with Union's discovery of the Erawan field, located about 300 miles south of Bangkok and 90 miles from the nearest landfall in the gulf. It was Thailand's first commercial discovery of gas.

Recognizing the value of its new energy resource, the Thai government decided to develop an energy project based on natural gas. By converting some of Bangkok's power generating plants to use natural gas instead of expensive, imported fuel oil, Thailand would take a significant step toward energy independence.

Thailand was able to secure financing (the World Bank played a leading role) to construct a 270-mile underwater pipeline to bring the gas to shore. An additional 100 miles of onshore pipeline would bring the gas to Bangkok's power plants.

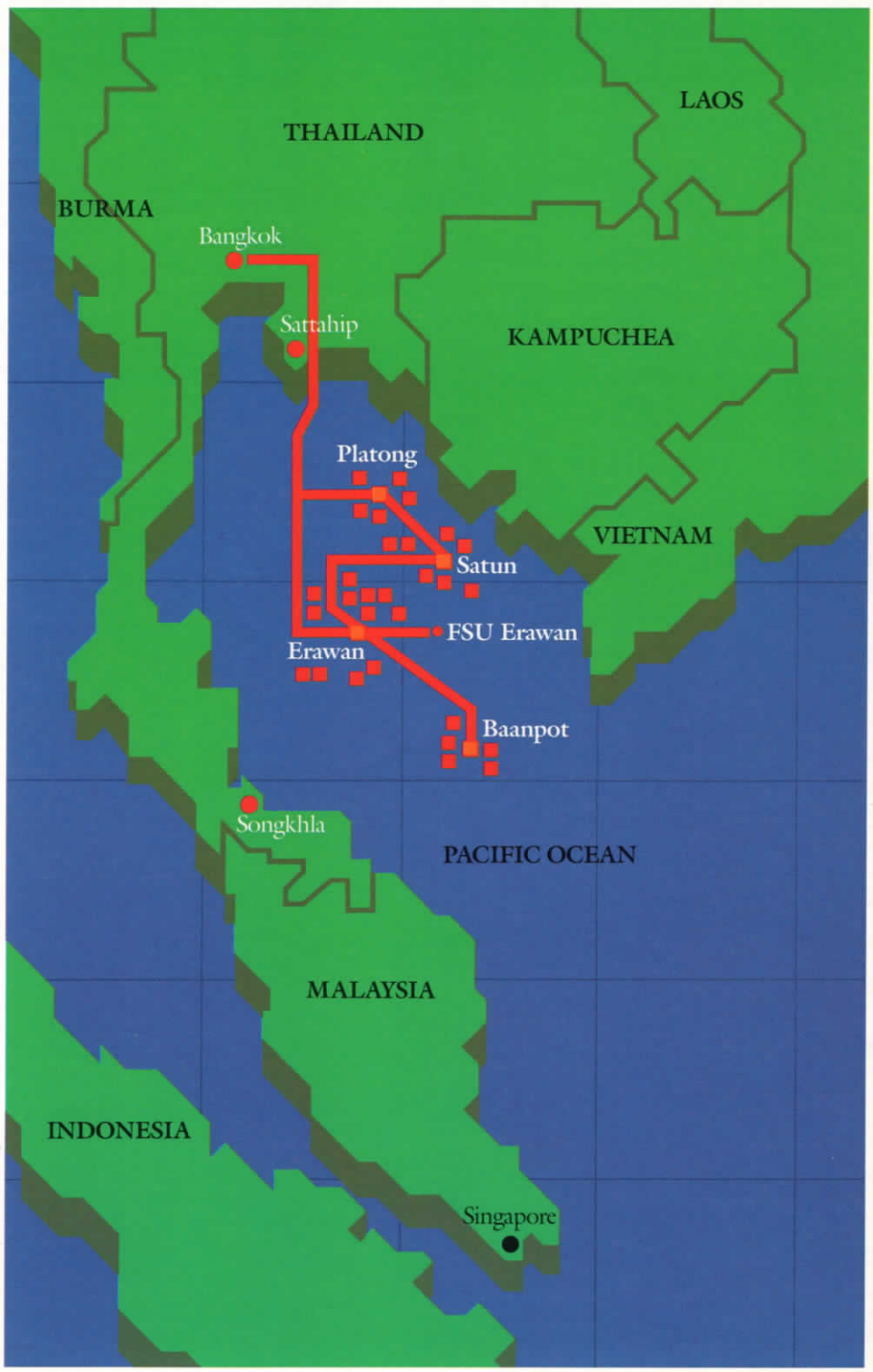
A representation of Erawan adorns the Temple of the Dawn in Bangkok. One academic source suggests the myth may have originated with the powerful Indian deity, Indra, who rode a 33-headed elephant.

"The only market large enough to support the high-cost offshore development program was the Electrical Generating Authority of Thailand (EGAT)," says Lian. "Without EGAT's demand for natural gas to power its generators, there could have been no offshore gas project. Once that market was assured, other smaller markets became viable—fuel for industrial uses, such as the cement industry. Now, there are plans for petrochemical and fertilizer plants."

In 1978, the Petroleum Authority of Thailand (PTT) was established to build the pipeline, purchase the natural gas from Union and resell the gas to customers in Thailand. The first gas sales contract was signed that year and development began.

In September 1981, the first natural gas arrived onshore at Sattahip. The occasion was celebrated with a valve-opening ceremony presided over by Prime Minister Prem Tinsulanonda and other Thai officials. (The Prime Minister heads a coalition representing several political parties. The government is a constitutional, parliamentary democracy, very stable and hospitable to business investment.)

Union Oil Company of Thailand's natural gas project in early 1986.



Construction of the natural gas project brings many benefits to Thailand, including reduced energy imports, more jobs, new technologies, new industries, and more work for Thai suppliers and contractors.

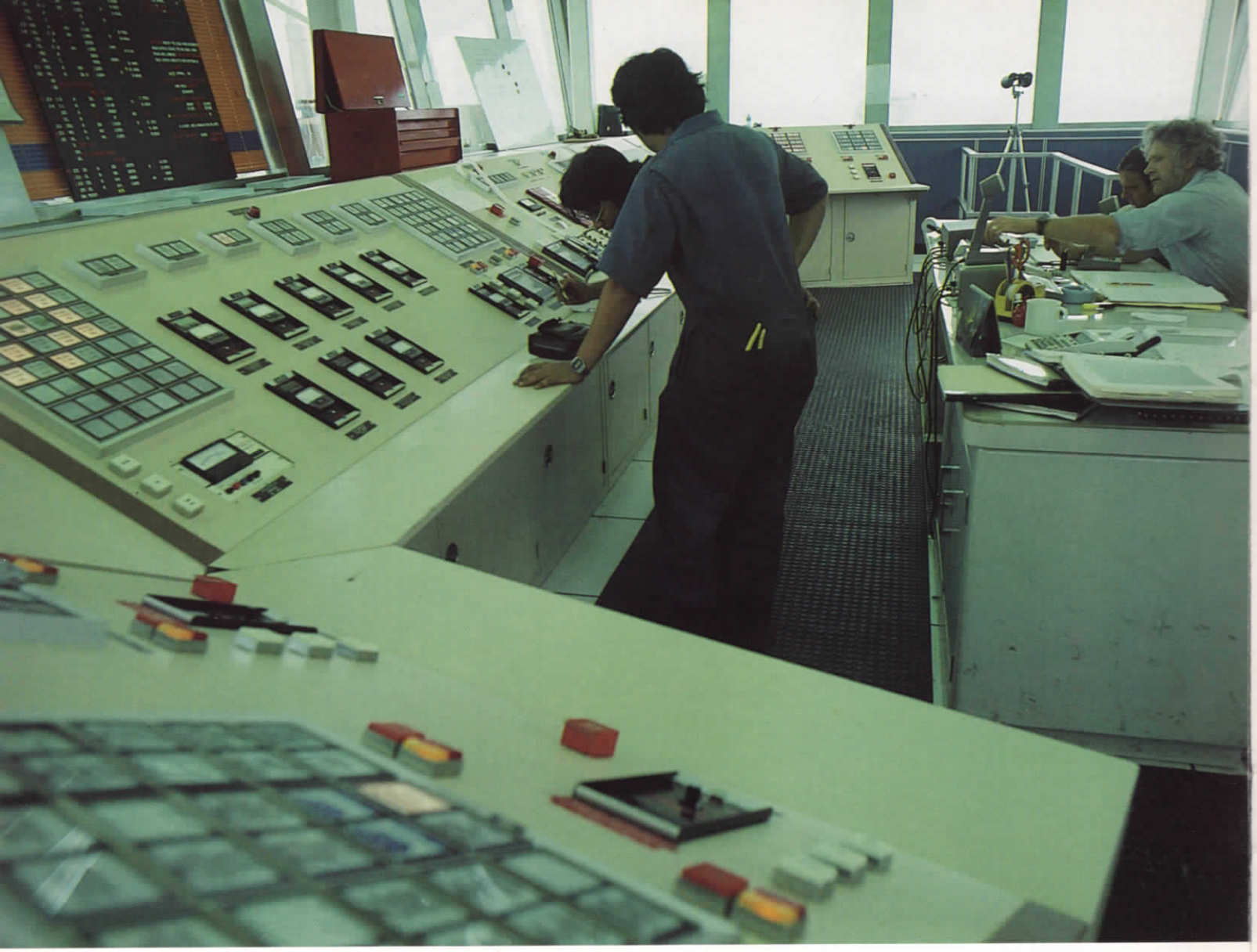
Construction of the project went smoothly. The Gulf of Thailand is relatively shallow, averaging some 200 feet in depth. The 34-inch gas pipeline was strung out on the sea floor. Platforms were designed for a "hundred-year storm wave" of 48 feet. (A "storm wave" is the highest expected in the worst storm that might come every 100 years. In the North Sea, platforms are built to withstand 100-foot storm waves.)

But, deep underneath the sea floor, Mother Nature had brewed a couple of geological typhoons that would create waves of a different kind for the project. Temperatures in the reservoirs were much higher than are usually found at well depths of 9,000 feet below sea level. And the geologic setting was much more complex than the initial delineation wells had indicated.

"We knew that we were dealing with high pressure reservoirs that would require careful drilling and completion techniques," says W.C. (Clyde) Barton, vice president for Union Oil of Thailand. "But we had measured temperatures on the order of 325 degrees Fahrenheit—not the 375 to 390 degrees that we encountered." The temperature gradients are among the highest in any gas field in the world, and probably explain why the basin is prone to yield gas rather than oil.

The high temperatures created problems with some of the downhole equipment, but these were quickly solved. The second underground surprise proved more perplexing.

At the time the first gas sales contract was signed in 1978, a well-known consulting firm estimated Erawan reserves at 1.58 trillion cubic feet. The Thai government planned accordingly, expecting to eventually reduce its imports by one third. It's annual import burden then totaled $3 billion.



The delineation wells drilled after Erawan's discovery indicated a large resource contained in several extensive underground reservoirs. But, as more wells were drilled and the production history began to unfold, it became apparent that the reservoirs were smaller than expected—a result of erratic geologic deposition and complex faulting.

By mid-1982, enough wells had been drilled and produced to make realistic production predictions. Union reevaluated the reserves and reduced the recovery estimates substantially. Recognizing that closer well spacing would be required, the company immediately revised its development plans, scheduling construction of three more well platforms in addition to the five originally planned for the Erawan field, and more than doubling the scheduled number of wells from 40 to 85.

In the summer of 1983, the same well-known consulting firm corroborated Union's revised estimates, presenting reserves of 628 billion cubic feet, some 60 percent less than originally thought. Instead of producing 250 million cubic feet of gas per day, the Erawan field produced less than 150 million. That has since been raised to 190 million cubic feet per day by increased development drilling.

However, in order to ease both its own and the Thais' disappointment in the field's production, Union volunteered to speed development of the other fields. In April 1983, the company signed an agreement with the Thai government concerning Baanpot.

Baanpot is part of the second gas sales contract, which was signed in March 1982. This contract covers five fields—Baanpot, Satun, Platong, Kaphong and Pladang—with production from the first three scheduled to begin in early 1985. But, since Baanpot is located just south of Erawan, it was practical to lay 17 miles of pipeline to carry Baanpot gas into Erawan's processing facilities. This enabled Baanpot production to commence in October 1983—14 months ahead of schedule.

Meanwhile, development of the Satun and Platong fields continues on schedule. Thirty-four wells have already been drilled at Platong, and four rigs are drilling at Satun. Total Union production should exceed 400 million cubic feet per day in 1985.

Left: Erawan's control room. A high level of computerization helps manage the complex natural gas project. Right: By year-end, Union will have laid 157 miles of pipeline to carry natural gas to the processing platforms and to the PTT pipeline, as well as condensate to the storage tanker.

"We are currently delivering about 220 million cubic feet of gas per day into the PTT pipeline," says Jimmie Johns, manager of production. "EGAT takes 190 for power generation and PTT sells the other 30 to its first commercial customer, the Siam Cement Company." In 1985 a gas processing plant will be operational, and its LPG (liquefied petroleum gas) output will be used for transportation fuel.

The gas is richer than expected and therefore has a greater heating value. A second pleasant surprise is Baanpot's production of more condensate than expected.

Condensate is a bonus by-product of gas production that is valuable as a blending stock with crude oil to produce gasoline and as a petrochemical feedstock. Thailand's three refineries can use only 5,000 of the 9,000 barrels per day that Union produces. Union is now exporting the rest.

The condensate is stored on the *Erawan,* a permanently moored, converted tanker with a capacity of 660,000 barrels. But first it is stabilized by boiling off the "light ends"—some methane, mostly ethane and propane. These gases are diverted into the natural gas pipeline, where their higher heating value helps offset the naturally occurring carbon dioxide in the gas. The stabilized condensate is less volatile and can be safely stored and offloaded for shipment to the mainland.

"The present-day geology under the Gulf of Thailand was created over a period of 50 to 60 million years," Dr. Lian explains. "We cannot change it. All we can do is try to understand it, map the important features accurately, and operate as effectively as we can under the geologic conditions."

For most of the past 70 million years, the Gulf of Thailand was not a gulf but part of the Asian land mass. Mountains formed along its edges, and the area began to subside. As it did, ancient rivers brought the products of erosion into the subsiding basin, where they accumulated as river channel deposits, floodplains and sandbars in random patterns. Swamp deposits, lake beds and sand dunes also formed.

Condensate is offloaded from the FSU Erawan, *some of it bound for Thai refineries and the rest for export. The storage tanker is permanently moored to a floating buoy, which allows it to rotate as prevailing wind and sea conditions dictate.*

This basin sank for millions of years, until the sedimentary beds reached five to six miles in thickness. The sands became traps for hydrocarbons—natural gas and condensate. These gas reservoirs were later broken apart by faults resulting from movements of the earth's crust. So, today the gas is localized in relatively thin beds of sand alternating with non-hydrocarbon bearing sands, shales and coal beds.

An average well has six or seven gas sands, although some have as many as 15. These range in thickness from about five to 40 feet. Here is where 3-D seismic computer analysis has proved helpful.

The use of 3-D seismic analysis (see accompanying story) was fairly new in 1978 at the beginning of the Thai development. But, it has proved its worth and become a valuable tool for identifying the best locations for well platforms and targets for individual wells.

"The computer saves weeks of labor," says Ken Bradley, manager of exploration. "We use it to plot optimum well paths, determining which underground formations are likely to be sands. It reduces our risk quite a bit, but it still can't tell us if the sands are wet or gas-bearing."

The analytical software currently in use for the 3-D seismic program is a prototype. It was developed by a Dallas firm with funding from several companies, including Union. Union of Thailand will receive the first production model of the software in late 1984.

"The 3-D seismic generates such a volume of data that a human being can barely handle it," Bradley says. The computer stores this mountain of information. A geologist or geophysicist can rapidly review and correlate data. If he wants a map, the computer will draw one in a few minutes.

The geology of the region has required a large number of wells. "We have six drilling rigs operating in the gulf," says Marty Miller, manager of operations. "We need a new well location every five days. Without this computer technology, we would have problems operating in Thailand."

Bridges connect the living quarters platforms to processing platforms.

Wells are drilled using tender-supported rigs on permanent 12-slot, four-pile well platforms.

"We drill each well through several gas-bearing zones," he continues, "and then produce from the bottom zones up. Even so, I would say the average well's production life is only about five years. In other fields, the typical life of an oil or gas well may be several times that."

So, speed is required both to achieve and to maintain the highest levels of production.

Each well is drilled and completed in 25 days, down almost half from the 45 days it took two years ago, according to Miller. "In 1980, average penetration was 200 feet per day. It was up to 500 feet in 1983 and, so far in 1984, we are drilling more than 700 feet a day."

There are three reasons for the increased speed. A new type of drill bit with diamond cutters has proved very effective. Oil-base muds, which have replaced water-base muds, reduce friction and provide better lubrication of the bit. And, as in any such project, the drilling crews get faster as they gain experience with each other and with the field conditions.

"Reduced downhole time and improved hole conditions have made money-saving changes in the casing and logging programs possible," says Dick Cook, manager of drilling.

In 1981, a well cost about $4.5 million. Now, with the savings in time and materials, the cost is less than $3 million. "With about 240 wells left to drill to complete the current plan, we will realize a savings of over $350 million," Cook adds.

Union's offshore Thai workers have received technical and English language training at the company's training center in Songkhla.

The use of the ocean-floor template that Union pioneered offshore Indonesia in the early 1970s has also saved drilling costs. In relatively shallow waters, the use of a template for drilling delineation wells allows the recovery of those wells later for production. This is because a platform can be built to match the template and can be maneuvered in place to line up over the sea floor well heads. "In Thailand, we must drill a large number of delineation wells, and it helps to recover as many of them as we can for production," says Cook.

Since Thailand had no workforce experienced in the oil and gas industry, expatriate help in the development has been necessary—and expensive. A high level of computerization of many functions—operations, finance, administration, warehousing and maintenance—has kept the need for expatriates to a minimum.

Union currently employs 620 people in Thailand, of whom about 135 are expatriates, says Paramaporn "Piak" Krairiksh, vice president, administration and public affairs. Half of the expats work in the Bangkok office, where there are now about 200 employees. The other half work offshore, and Union expects to replace most of these with Thai citizens by the end of 1987.

There are already ten Thais in supervisory positions on the offshore platforms. All are graduates of Union's training center, an educational showplace in Thailand. In all, there are almost 200 graduates of the center. And a new class of 60 begins in the fall.

Students are recruited from Thailand's technical schools, which offer three years of training after high school. The students become Union employees, and the training—both in the classroom and on-the-job—lasts a full year. "It includes two months of intensive English so that the students can read the operating manuals and use the necessary technical terms," Piak says.

Songkhla, where the training center is located, is the staging area for Union's offshore facilities. Including contractors, the project has more than 1,000 people working offshore at any given time. Union employees work two weeks on and two weeks off.

This very high level of activity is continuing. Eight platforms are producing at Erawan; three more are being fabricated and will be installed late this year.

The installation of 11 more platforms by mid-1985 will bring the total for the offshore project to 38.

Exploratory drilling is planned to identify a location for a twelfth platform, which would be installed in Erawan in 1985. At Baanpot, one well platform is currently producing and three more platforms will be installed in 1985. A central processing platform and a living quarters platform will also be installed in 1985.

The offshore operations extend over a distance of 55 miles. At night, the gulf takes on the appearance of a large city, as lights blaze from well platforms, processing platforms and living quarters. "At present, 27 platforms have been installed," says R.A. "Bud" Nordquist, manager of construction. "By this time next year, we will have installed 11 more, bringing the total number to 38."

Natural gas and condensate produced at the 12-slot well platforms are delivered by pipeline to central processing platforms—one at each field. The condensate is then separated and piped to the *Erawan* storage tanker.

"By the end of 1984, we will have laid 157 miles of interconnecting pipeline and drilled 150 development wells in the four fields," says Nordquist. The number of development wells will increase to 238 by the end of 1985.

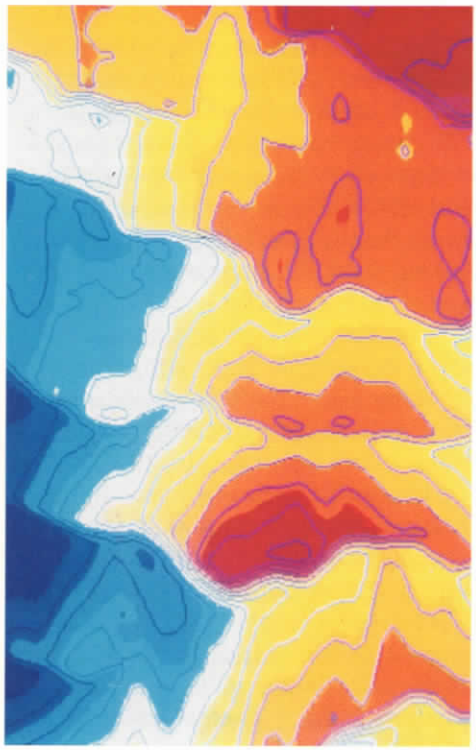
Dr. Hal Lian has been involved in Union operations in Thailand for 20 years, moving to Bangkok as president of the company in early 1983. He and his wife enjoy the people and the country. (Lois has the distinction of being first violinist in the Bangkok Symphony Orchestra.)

Dr. Lian is quick to point out the many benefits that the development of a domestic oil and gas industry is bringing to Thailand's 55 million people. The savings in foreign exchange from the reduction of imports will be more than $200 million in 1984. By 1985, it will be $500 million a year. Union buys from Thai suppliers and hires Thai contractors. The oil and gas industry brings new skills and new technology to Thailand. And it spawns new industries.

Union has discovered five other gas fields in the gulf—Pakarang, Jakrawan, Trat, Funan and North Pladang—which may be suitable for development. And other companies are beginning to develop other hydrocarbon finds, both onshore and off.

Perhaps Erawan was no mythical beast after all, but is still busy defending and preserving the Thais. ⑯

3-D reveals more about the underground.



This contour map, derived by computer from 3-D data gathered in the Platong field, assists geophysicists in selecting the best well locations.

Seismic surveys provide information about the underground geologic structure of the earth. This is possible because energy waves travel at different speeds through different kinds of rock. So, the seismologist creates energy waves at the surface and sends them through the earth's crust. The echoes or reflections of these waves can be picked up by sensitive listening devices, just as earthquake waves can be recorded in seismic laboratories.

The geophysicist analyzes this information and draws conclusions about the underground geology. The combination of this seismic data with drilling information provides the basis for determining well locations (or offshore platform locations), and the specific drilling objectives of each well.

The conventional method of obtaining seismic data is to "shoot" lines on a rectangular grid. The lines are spaced anywhere from ½ mile to one mile or more apart. In this case, the geophysicist must then make assumptions about how the geology might look in the wide spaces between the lines. If the geology is relatively uncomplicated, this type of survey is adequate.

However, some situations where the geology is very complex merit a closer look. Several years ago, three-dimensional (3-D) seismic surveying was developed. Using this technique, the parallel lines of data are spaced much more closely together creating a much greater volume of data.

Union has made 3-D surveys of every gas field it is developing in the Gulf of Thailand. The seismic lines are spaced 250 feet apart over a north-south distance of 60 miles.

With this data stored in Union's powerful computers, the geophysicist is no longer restricted to examining widely-spaced, isolated lines of data. Since he has points of data from all over the field, he can create seismic lines in any direction to solve specific problems. He can map the extent of individual gas sands and determine the best course for a development well. Or, he can get a "3-D" feeling of moving through the various subsurface features by asking the computer to present the data in sequence.

Three-D seismic presents staggering amounts of data. But, in the last two years, computer software has come up to speed and the vast volume of data can now be analyzed quickly and more effectively. Union's Bangkok office is using the most advanced computer-assisted interpretation techniques available to the petroleum industry anywhere in the world.

"We build up expertise as we develop any given field," says Ken Bradley, manager of exploration in Thailand. "But 3-D seismic has helped us learn a lot more a lot faster about some very complex geology. In many cases, we can identify individual gas sands, map their extent and determine their origins as, for example, a floodplain or lake bed."

Opportunities to use 3-D seismic are increasing worldwide as oil and gas get harder to find. The cost of seismic data collection, even the more time-consuming and costly 3-D operations, is much less than drilling—especially in difficult environments such as the Arctic and the North Sea, and in areas like the Gulf of Thailand where the complex underground landscape presents a unique challenge. (76)

Sharing in the Spirit:

A Day in the Life of the Olympic Torch Relay

Long before the 23rd Olympiad got underway in Los Angeles, excitement for the Games mounted steadily across the nation. For 82 days leading up to the July 28th opening ceremonies, the Olympic Torch Relay wound its way across the U.S.A., drawing enthusiastic crowds all along its 9,000-mile route.

Lit by the sun's rays within the ruins of ancient Olympia, Greece (site of the first Olympics in 776 B.C.), the "sacred flame" arrived in New York City on May 8. From there it passed through 33 states and more than 1,000 communities—large and small—on its way to the Coliseum in Los Angeles.

Along most of its route, the Olympic Torch was carried by a cadre of runners from AT&T, the official sponsor of the Torch Relay. But nearly 4,000 individuals who carried the flame were special "Youth Legacy Kilometer" runners. They (or their sponsors) paid $3,000 each for the privilege of carrying the flame one kilometer, with all proceeds going to Boys and Girls Clubs, YMCAs, and the Special Olympics.

The Union Oil Foundation sponsored two of these Youth Legacy Kilometers. They were run consecutively on the evening of July 19 by Claude Brinegar, senior vice president of administration; and Elaine Murphy, secretary to John Hopkins, president of the Energy Mining Division. Both Brinegar and Murphy are seasoned runners, having run for several years and competed in marathons.

Quite appropriately, on the day of their run the Olympic Torch passed through the heart of some of Union's original (and still quite active) territory in the Santa Maria, Orcutt, and Lompoc areas of California. Following is an account of that "day in the life" of the Olympic Torch Relay.

6:30 a.m.

The sun hasn't yet come up over the hills to burn off the morning mist in Santa Margarita. But this tiny (pop. 730) town, nestled snugly in the southern end of the Salinas Valley, is already wide awake. People are lined up all along the two-block long main street—talking excitedly, laughing, waving flags and checking cameras.

"I usually don't get up this early," says a teenage girl, still wiping the sleep from her eyes. "But this is something special. It's a piece of history I didn't want to miss."

Minutes later, the Olympic Torch Relay caravan comes rolling into town—a cluster of brightly painted cars, vans and motor homes escorted by the California Highway Patrol. When they stop, attention quickly centers on one of the cars. Sitting on its trunk is a small platform holding a pair of sealed brass miner's lamps. A tiny flame flickers inside each one.

"Did that come all the way from Olympia?" someone asks one of the torch officials.

"You bet," he says.

At 6:50, a cadre runner emerges from one of the vans, carrying one of the official propane-fueled Olympic Torches. Cameras click frantically as a crew member lights a sparkler from one of the lamps, then touches it to the top of the torch. The flame ignites. The runner holds the torch up high for a moment, then jogs off behind the pace car to a chorus of cheers and applause. Day 73 of the Olympic Torch Relay is off and running.

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8:10 a.m.

Passing through the hills over Cuesta Grade (elevation 1522 feet), the flame is carried down into the city of San Luis Obispo. Throngs of people line the town's main boulevard, and flags and banners are everywhere. ("May The Olympic Torch Relay Peace," one of them reads.) Several Youth Legacy runners will carry the flame through town. Clad in their official running suits, with torches in hand, they appear both nervous and excited. Knots of people crowd around each runner, taking pictures and shaking hands.

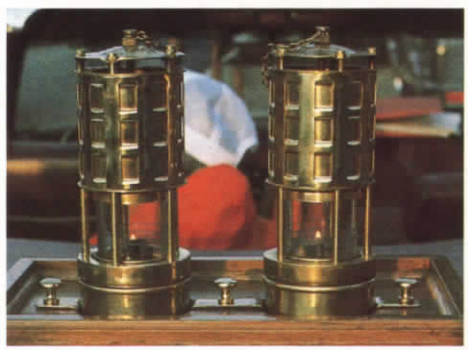
"Can I hold the torch?" a little boy asks Becky Hawkins, 25, as she stands awaiting her turn. But it's too late; here comes the flame. Cheers erupt as the runner dips his torch to light Becky's, and a moment later she is off, holding the flame high and grinning ear to ear. A throng of people and cars follow, creating an instant traffic jam.

9:30 a.m.

After traveling south down U.S. Highway 101—making several detours off on side roads—the flame enters the small seaside community of Shell Beach. The crowds are thinner here, but just as enthusiastic. Several groups of small children hold up homemade signs and flags, and a local brass band has set up on a flatbed truck. They join the procession in the middle of town, and wind up leading the torch caravan for several miles.

11:15 a.m.

The Olympic Torch passes through Arroyo Grande. A light rain dampens neither the flame nor the enthusiasm.

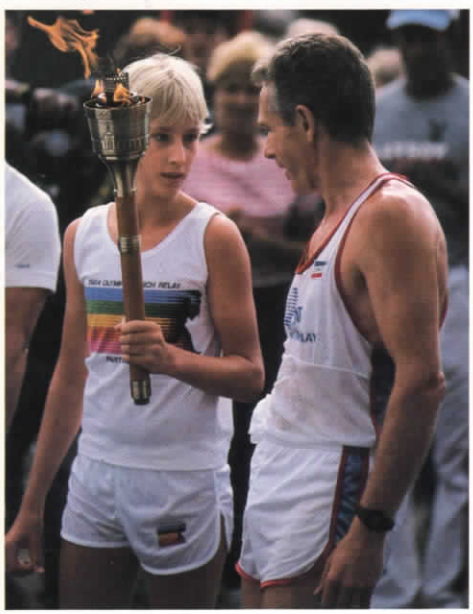


Top: The sacred flame is sealed in miner's lamps. Everywhere, crowds line the roads and torchbearers are greeted with cheers, flags and banners.

2:00 p.m.

As the torch moves inland, the sunshine returns. And Santa Maria (pop. 40,000) has turned out in force to see the flame pass by. Youth Legacy runners are stationed at every kilometer, each an instant celebrity. News reporters and television crews abound, and the crowds stretch for miles. One runner gets so swept up in the festive atmosphere he almost drops the torch during his run.

"This is for Santa Maria! This is for the U.S.A.!" he exclaims at least every 50 yards, drawing roars of approval from spectators.



4:45 p.m.

The road outside the main gate to Vandenberg Air Force Base is lined with uniformed officers and cadets, all of them eager to catch a glimpse of the Olympic Torch. When it finally arrives, the response is overwhelming.

"I think this is great," says one of the cadets. "It's a patriotic event, and it also symbolizes what the Olympics really stand for—peace, brotherhood, and understanding."

6:00 p.m.

The Torch Relay Assembly Center at the Lompoc Elks Club is a sea of commotion. Among the runners gathered to receive their uniforms, torches and instructions are Claude Brinegar and Elaine Murphy, who will carry the flame several miles south of town. Both of their families have joined them for the event, and Brinegar himself has returned directly from a trip to Washington D.C. to make the run. Looking at her torch, Murphy confesses that she's nervous—and that she's nursing a sore leg. "But that won't stop me from running today," she says. "This is a once in a lifetime opportunity."

"It's very exciting to get to be a part of the Olympics," Brinegar says, heading off to change into his Torch Relay uniform. "And I appreciate the Foundation's support."

As the group prepares to leave for their assigned spots, the torch caravan itself passes right by the Elks Club. A helicopter hovers directly above, and a line of cars trails behind for at least a mile.

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7:00 p.m.

The rolling hill country south of Lompoc is a welcome respite from the crowded, hectic towns along today's route. The low sun gives rich texture to the peaceful yellow hills, dotted with clumps of trees and greenery. Leaves rustling in a gentle breeze provide the only sound. Aside from the runners, who stand with their families and friends at assigned spots on two-lane Highway 1 (the only road), there are no people in sight anywhere.

Waiting patiently a kilometer apart, Brinegar and Murphy stretch, talk with their families, examine their torches, and ponder their upcoming guardianship of the Olympic Flame. At 7:30, the sun gently dips behind the ridge of hills to the northwest.

7:50 p.m.

Abruptly, the flame finally arrives, carried by a U.S. Marine from the base in Twenty-nine Palms. He stops beside Brinegar, dips his torch and passes along the sacred flame. Several other Marines have accompanied the caravan, and they all pause to salute the U.S. flag in tribute. A moment later, Brinegar heads off up the road.

Although his segment is almost entirely uphill, it takes him just a few minutes to reach Murphy. Smiling broadly, Brinegar passes her the flame and hugs his wife. With a wave from her husband, Murphy is off—limping slightly but all smiles. Everyone cheers and applauds, and a moment later the caravan disappears around a bend.

Epilog:

It was nearly 1 a.m. when the Olympic Flame reached the day's final destination: the town of Goleta, 110 miles from Santa Margarita. Even at that wee hour, plenty of people were on hand to welcome it.

Nine days later, millions around the world would see the same flame complete its 9,000-mile journey at the Coliseum in Los Angeles, where it would light the beacon to officially open the XXIII Olympiad. Each Torch Relay runner carried the flame for just a small portion of those 9,000 miles. But for those who shared in this special event, the value of the experience has nothing to do with distance.

"It was a wonderful run," Claude Brinegar said as he stood by, beaming, after completing his segment. "And it was a thrill I wouldn't trade for anything."

Traffic on Highway 101 backs up behind the torch caravan as it travels south from Santa Maria. Claude Brinegar (wearing a Union 76 cap) receives the flame, then runs his kilometer through the hills south of Lompoc. He passes the flame to Elaine Murphy, who runs the next kilometer as the torch light brightens in the twilight of Day 73 of the Olympic Torch Relay.

NEW HOME FOR A GRAND OLD LADY

The airplane certainly doesn't look retired. Sitting out on the concrete, with her nose tilted skyward and her shiny new paint job sparkling in the sun, the old DC-3 still seems eager to fly. You can almost hear those twin prop engines roaring to life, just as they have for more than four decades.

But this grand old lady of the skies is indeed retired. And she's earned her rest. Having flown nearly 48,000 hours and covered 10 million miles without incident, the plane has outlasted and out-performed many a sister ship of her era. Unlike most of those other retired DC-3s, however, this one isn't headed for the scrap heap.

Meet the *Spirit of Seventy Six*, a workhorse of Union Oil's aviation fleet for more than 30 years. Withdrawn from service in 1982, she is now beginning a brand new life at the California Museum of Science and Industry in Los Angeles. Along with a United Airlines DC-8, the plane is now on permanent display in the museum's new outdoor Air and Space Garden in Exposition Park. The exhibit is part of a $48 million expansion and renovation project now underway at the museum, which will include a new seven-story aerospace complex and IMAX giant screen theater.

A strong supporter of the museum for many years, Union donated the venerable DC-3 so that future generations will be able to see and touch a bit of aviation history.

Dedication ceremonies for the two aircraft were held on July 12. Among those attending were California Lieutenant Governor Leo McCarthy, Museum of Science and Industry Chairman Joseph R. Cerrell, United Airlines Chairman Richard J. Ferris, Douglas Aircraft President James E. Worsham, and Union Oil Chairman Fred L. Hartley. Mr. Hartley presented the plane's log books to the museum, along with a bound history of the aircraft prepared by Bob Beechler, one of Union's pilots.

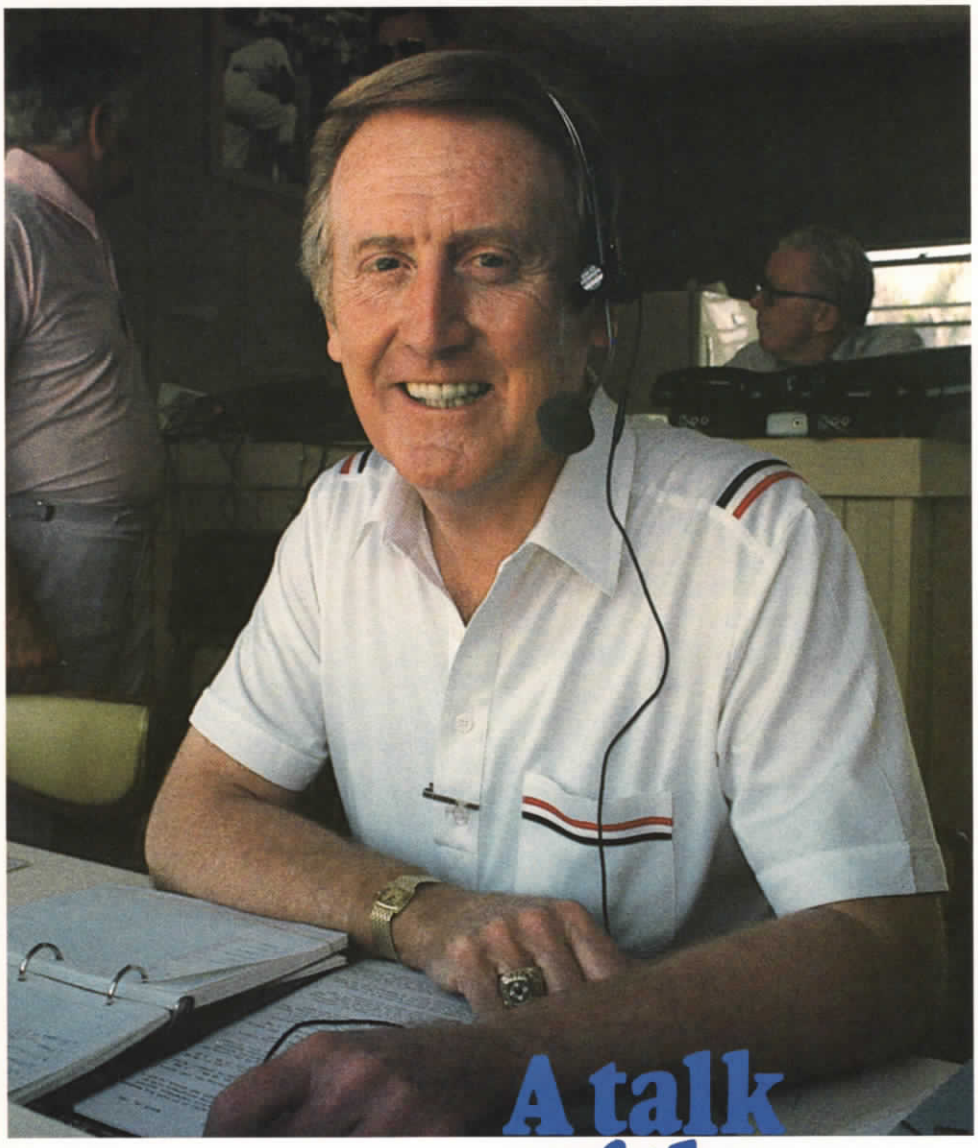
"We at Union Oil Company have a special attatchment to this airplane," Hartley told the gathering. "When we purchased her [from TWA] in 1950, Union was a regional oil company and little more. It was during this ship's years of service that Union became the worldwide, high technology earth sciences corporation it is today."

Built in 1941 at Douglas's Clover Field in Santa Monica, the DC-3 spent nine years as a commercial airliner for TWA. During that time she amassed over 34,000 hours of accident-free flying time. The aircraft served Union equally well for 32 more years. "We didn't just assign this plane to executive transportation," Hartley said. "Union scientists and engineers crisscrossed this hemisphere aboard the plane, surveying frontier areas for potential oil and gas prospects."

It is fitting that the DC-3's final resting place be at the Museum of Science and Industry. From 1977 until its retirement in 1982, the plane was regularly removed from corporate service by Union and made available for transporting museum instructors and science exhibits to rural California communities.

"For thousands of schoolchildren who couldn't come to the museum, the plane brought the museum to them," Hartley said. "I am delighted that she is coming to rest in this beautiful setting only a few miles from her birthplace." 76

Minus its wings, Union's DC-3 was towed on a circuitous route of surface streets from Burbank Airport to the museum near downtown Los Angeles. The plane left Burbank (north of L.A.) at midnight and wheeled into its new home some 30 miles and six hours later—surprising many a passerby along the way.
Far left: The airplane on display.



A talk with baseball's golden voice

He's been called the "Golden Voice," and the "dean of the broadcast booth." Among his peers, he's regarded as the best there is. To Dodger fans, he is simply "Vin"—a close and longtime friend with whom over three decades of Dodger baseball action have been shared.

Indeed, Vin Scully has truly brought that action to life. For 35 seasons now, Scully has been the voice of Dodger baseball on radio and television broadcasts. For 27 of those years the team has played in Los Angeles, and Union Oil has served as the major broadcast sponsor for 25. Scully does many of the Union commercials himself.

Over the years, Scully has literally taught the game of baseball to a new generation of fans, many of whom make a habit of bringing along radios when they attend Dodger games. Listening to him, fans don't only get the play-by-play. They're also treated to nuggets of news and information about players and teams, an analysis of game strategy, up-to-date scores and statistics, and humorous anecdotes—all delivered in the smooth, conversational style that's a Vin Scully trademark.

Dodger fans appreciate Scully so much that they voted him top Dodger personality in a poll a few years back. In 1982, he was inducted into the broadcast wing of baseball's Hall of Fame.

In recent years, Scully, now 56, has begun to branch out and reach a larger, national audience. Since 1975 he has done tennis, pro football and golf broadcasts for network television during the baseball off-season. And this year he began announcing NBC's nationally televised baseball "Game of the Week" each Saturday.

Busy as he is, Vin Scully recently took time out to talk with *Seventy Six*. The interview took place in the Dodger Stadium press box before a game.

Seventy Six: As every Dodger fan knows, you've spent much of your life in the broadcast booth. How did you first get interested in sports announcing?
Scully: It actually goes back to my early childhood. Growing up in New York, I used to listen to college football games on radio, and I was totally enthralled by it. I remember writing a school composition at age eight, saying that I wanted to be a sports announcer. At Fordham University, I worked on an FM radio station, and when I graduated in 1949 I got my first job with CBS radio in Washington, D.C.

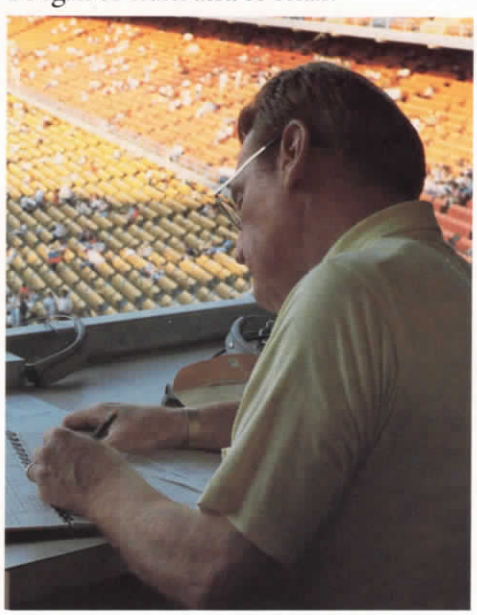
Seventy Six: How did you hook up with the Dodgers?
Scully: Well, I was doing football for CBS, and during some of those games I worked with Red Barber, who was then the lead announcer for the Brooklyn Dodgers. I guess the Fates must have arranged that, because Red was looking for a young announcer whom he could train. He asked me, and needless to say, I was thrilled. I went to spring training in 1950—on a month's trial—and I've been with the Dodgers ever since.

Vin Scully with partner Jerry Doggett in the mid-60s.

Seventy Six: How did Red Barber go about training you?
Scully: The main thing he did with me was to establish good work habits. He taught me the importance of preparation—getting to the park early, going into the clubhouse, asking questions and sniffing out as much information as possible. One of my early jobs would be to get the day's lineup. If it was different from the day before, Red would ask me why. The first time, I didn't know. Well, he really chewed me out, and told me it was my job to know. From then on, I always had an answer.

Seventy Six: Did he try to teach you style?
Scully: Never. One of the most important contributions Red made to my development was telling me never to even listen to anyone else. You bring one special quality into the booth that no one else can bring, he'd say—yourself. Don't ever lose that. I've followed that advice to this day.

Seventy Six: Had you done any baseball announcing before?
Scully: None. I'd played baseball in college, so I had a basic feel for the game. But I made a lot of mistakes. Fortunately, Red and (his partner) Connie Desmond took care of me. And through a gradual process of evolution, I began to learn and to relax.



Scully reviews current statistics before every game.

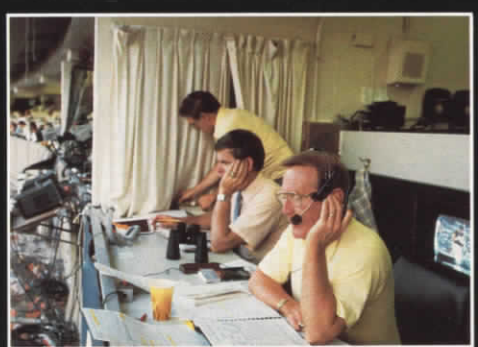
Seventy Six: How would you describe the role of a sports announcer?
Scully: Primarily, you're a reporter. You tell the listeners what's happening on the field. You're also a middleman between the fans and the team. In other words, I don't look at myself as an expert. But as one who's privy to the experts, I can tell the fans what I may have found out. If I have something humorous, I may tell that. But my primary task is to follow the ball and describe the play.

Seventy Six: On the air, you always seem to be brimming with facts and anecdotes. How do you compile all that information and call it up so readily?
Scully: A lot of the hard information is on paper. You have the team press guides, you have newswires, and the Dodgers have a computer that provides printouts of all the current statistics. The anecdotes will come from things I've heard or read. Or something might happen in a game that will trigger a memory.

Seventy Six: Having been with the Dodgers for so long, is it hard for you to be impartial?
Scully: I don't think so. Of course, you're traveling with one team all year, you're friends with them, and you'd like to see them do well. But you can't let your emotions get in the way. If you start seeing things with your heart instead of your head, then your judgment is suspect and your credibility crumbles.

Union Oil and the Dodgers: an enduring relationship that's truly become a "union."

Above: A "booth's eye view" of Dodger Stadium. Right: Dodger ace Fernando Valenzuela winds up.



Above: The "Golden Voice" at work, with partner Ross Porter looking on. "I've always believed that one voice is easier to take."

Seventy Six: Are you fairly free in making criticisms?
Scully: Well, if someone makes a mistake, it's not really a criticism to relate what he's done. I don't think, though, that an announcer should question a team's strategy. What I might do, as a situation builds, is give you the options a manager has. But I would never second-guess a manager's decisions. That's not my job.

Seventy Six: Are there major differences between radio and television work?
Scully: Definitely. Radio is all description, while television is basically subtitles for pictures. I'll talk a lot less on television, and I won't say the same things.

Seventy Six: Many broadcasters today work as a team, with one announcer doing play-by-play while another provides commentary. But you and your partners, Jerry Doggett and Ross Porter, always work in shifts. Why is that?
Scully: I've always believed that one voice is easier to take for the listener. Having an analyst is fine, but it means more talking. It's also easier to concentrate when you're working alone.

The importance of preparation: Scully always arrives early to "sniff out" information.

Seventy Six: Yet, on the "Game of the Week" broadcasts, you and Joe Garagiola seem to work very smoothly as a team.
Scully: Well, Joe and I have known each other for years. We like and respect one another, we enjoy working together, and we've tried to develop a give-and-take rhythm on the air. It's been a bit like two new infielders developing their double play combination. But so far it's worked out fine.

Seventy Six: Let's go back to the Dodgers. When the team came to Los Angeles in 1958, you had already been with them eight years. How did you feel about the move west?
Scully: Up until then, I hadn't really spent much time out west. So it was a very challenging and exciting time for me. From the team's standpoint, it was a calculated risk, but one that Mr. O'Malley felt would work. I don't know if anyone thought it would work this well. In those days, no one dreamed of drawing two million fans a year—let alone over three million. Today you'd have to say that the Dodgers and Los Angeles were an ideal pairing.

"Everyone has their favorite Dodger moments. The list is endless."

Seventy Six: Speaking of pairings, Union Oil has been associated with the Dodgers for 25 years now. Is that kind of longevity unusual in sports sponsorships?
Scully: Oh, yes, I would say so. And it's a relationship that's been very close in a number of ways. (Former Union chairman) Reese Taylor and Walter O'Malley were very good friends. They together built Dodger Stadium, and that forged the basis for an enduring relationship. Peter O'Malley is on Union's board of directors today. Another reason Union Oil's sponsorship has proved so enduring is that it's truly become a "union." If you present the fans with one, they invariably think of the other. If you say Union Oil, they think Dodgers, and if you say Dodgers, they think Union Oil. That's ideal for a team and a sponsor. It's a great marriage.

Seventy Six: You've done Union Oil commercials during Dodger games for quite a while now, haven't you?
Scully: I should say. On both radio and television, for many years. We usually film the TV spots just before the season starts, at the Union 76 service station outside Dodger Stadium. And I have a lot of fun doing them.

"You're traveling with the team all year, and you'd like to see them do well. But you can't let your emotions get in the way."

Seventy Six: What was your initial impression of Dodger Stadium when it first opened back in 1962?
Scully: I thought it was just magnificent. Ebbetts Field in Brooklyn was quaint, but Dodger Stadium was a palace. And we knew it was only going to get better.

Seventy Six: One thing unique to Dodger Stadium is that many fans bring along transistor radios so they can listen to Vin Scully call the game.
Scully: That actually started when the Dodgers played in the Coliseum. I think people needed the radios because they were so far away from the action, and the habit just stuck.

Seventy Six: Vin Scully must have something to do with it. A few years back, you were voted favorite Dodger personality by the fans. Why do you think you're so popular?
Scully: I appreciate things like that, but I don't try to take it apart. I've been representing a product that's been highly exciting and successful, and I guess some of it has rubbed off on me.

"When you've seen players develop and mature, it's always sad when they go. You've shared a lot of thrills, ups and downs, and fun."

Seventy Six: You've been a witness to so much Dodger history over the years. Do any special games or moments stand out?
Scully: Well, everyone has their favorites. I suppose the 1955 World Series championship stands out, because that was the Dodgers' first. That team—Robinson, Reese, Hodges, Campanella—will always be dear to me. Then there was the four-game sweep over the Yankees in 1963. Sandy Koufax's four no-hitters, including a perfect game. Hank Aaron's 715th homerun against the Dodgers. Don Drysdale's 58⅔ scoreless innings string. The list is endless.

Seventy Six: Is it sad for you when veteran players leave the Dodgers?
Scully: Oh, sure. Everybody knows it's got to come. But when you've seen a player come up as a rookie, seen him develop and mature; when you've shared so many thrills, ups and downs, and fun . . . it's always sad when they go. And a little piece of your own mortality always goes with them.

Seventy Six: Now that you're doing the "Game of the Week" broadcasts in addition to Dodger games, your schedule must be very hectic. Does the length and pace of the season get tiring for you?
Scully: It's an endurance contest, in a sense. But the extra travel for the NBC games hasn't really bothered me. I'll leave on Friday morning and usually be back by Saturday evening. And I very much enjoy doing the "Game of the Week." It's a nice break in the routine.

"The thing that's marvelous for me is that I still thoroughly love announcing baseball."

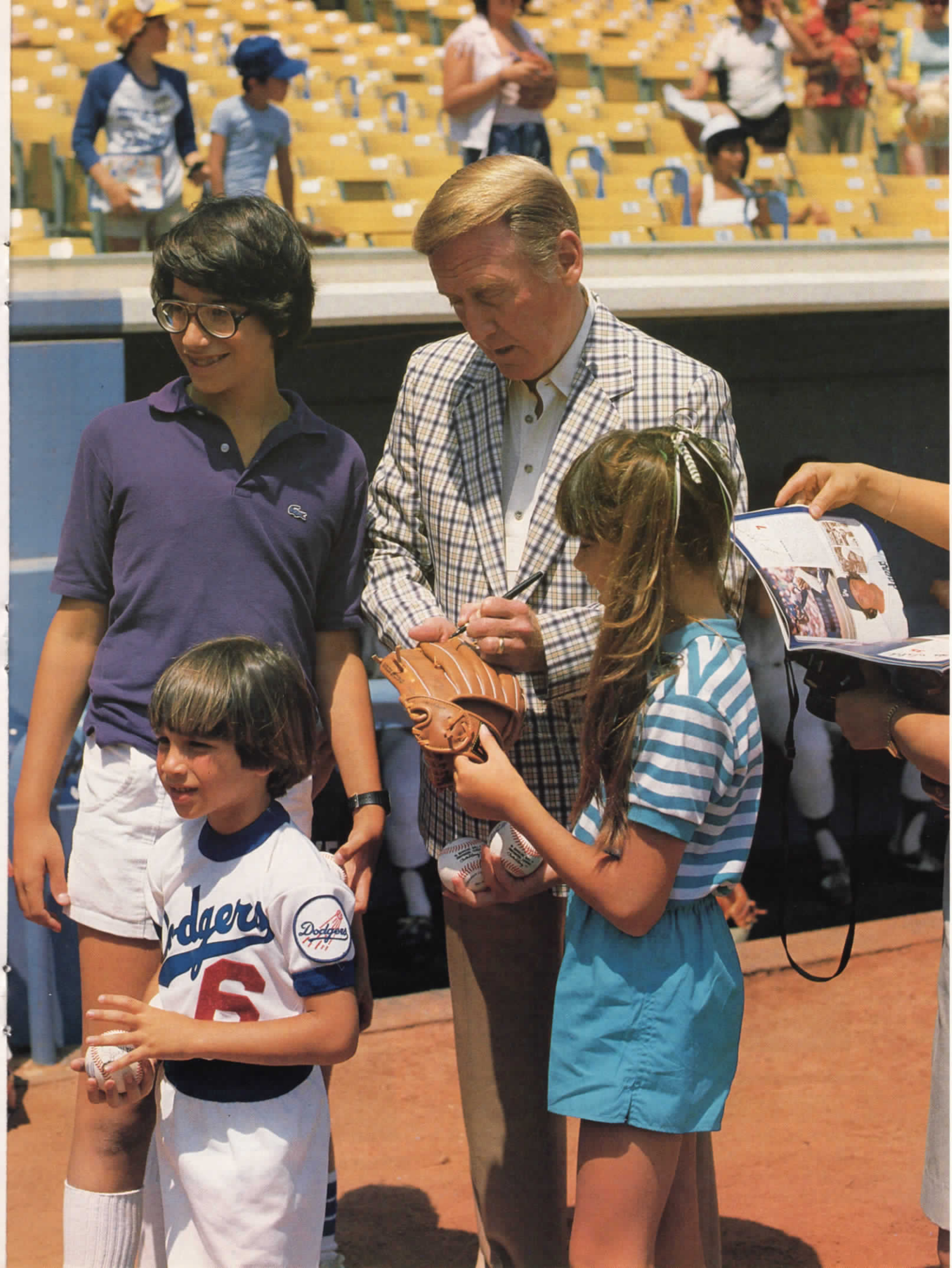
Seventy Six: What do you do during the off-season?
Scully: I take the whole fall and much of the winter off. I like to ski, play golf, read, and spend time with my family. I have six children, so that keeps me pretty busy.

Seventy Six: Do you do any special exercises to keep your voice in shape during the off-season?
Scully: Oh, no. I talk enough as it is.

Seventy Six: What's down the road for Vin Scully? After all these years of broadcasting, do you ever think about giving it up?
Scully: Never. I think I'm extremely fortunate to be in this line of work. It's what I've always wanted to do, and I've never even thought about going into anything else. To be sure, a lot of years have gone by. But the thing that's marvelous for me is that I still thoroughly love announcing baseball. An exciting play will still give me goose bumps. And every time I start to think I've seen it all, something totally new and surprising will happen. That's part of the charm of the game. And as long as that emotional feeling is there, I know I'm fine.

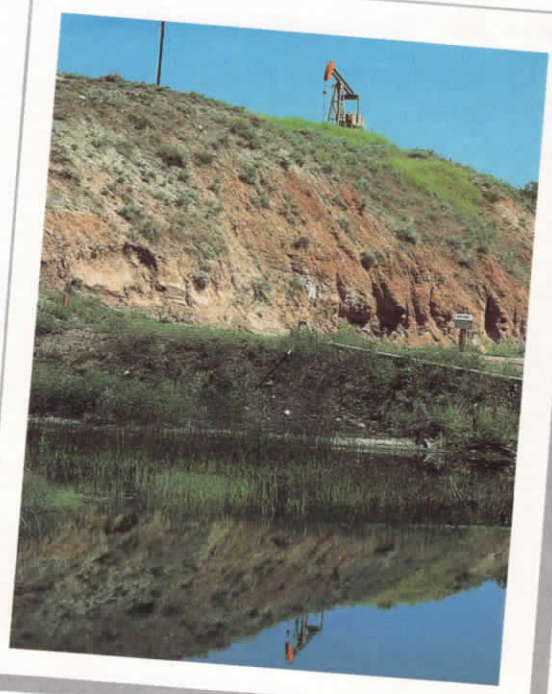
Seventy Six: One final question. Have you ever gone to a baseball game purely for enjoyment?
Scully: (laughter) Not once. I'm too accustomed to going and working. I really don't think I could sit there without talking. ⑦⑥

Right: Scully signs autographs before a game. "I've been representing an exciting product, and I guess some of it has rubbed off on me."

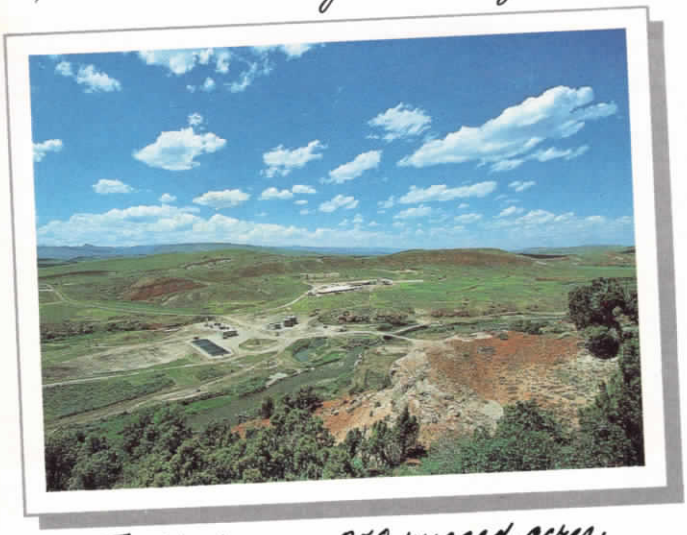

Dodgers
6
Dodgers

Exposed red rock reveals the Chugwater formation where oil was first found.

The field has produced 10 million barrels.



Dallas Dome history on display.



The field covers 250 rugged acres.

The start of something big...

Dallas Dome Hits 100: still producing after all these years.

In the early 1800s, rugged Wyoming was a formidable wilderness that people had to pass through on their way to the promised lands at the end of the Oregon Trail. There was a stopping place on the trail near the Little Popo Agie River (pronounced po-po-zha).

Here, below distinctive red bluffs, was a tar seep — long known to Indians and trappers, who used the black goo as both liniment and firestarter. This seep would inspire Mike Murphy, onetime gold prospector, to drill the territory's first flowing oil well in 1884 about nine miles southeast of Lander. (Earlier sites had been excavated.)

That's how Murphy launched Wyoming's biggest industry—a little too early, however, for him to cash in on the huge market for petroleum products that would develop later.

Today, Wyoming is the sixth largest oil producer in the 50 states. Of Wyo-

A festive atmosphere...

Bill Flint welcomes 500+ guests.

ming's 23 counties, 21 produce oil—some five billion barrels so far. Ten million of those have come from the Dallas Dome field.

Over the years, Dallas Dome changed hands many times. By the end of World War II, the field needed modernization and expansion, which then-owner Thermo-Petroleum undertook. W.H. Barber Company operated the field into the '50s, until Pure Oil bought out its interests. The field became part of Union Oil's operations at the time of the merger with Pure in 1965.

More than 500 people turned out for the field's centennial celebration at the end of June. The mood was made more festive by the fact that 1984 also marks the centennials of Fremont County and the town of Lander. Both were settled during the Sweetwater rush for yellow gold, which reached its height in the 1860s. Subsequently, black gold turned out to be the real prize.

Fred Hartley, president and chairman of Union Oil Company of California, noted at the celebration that Dallas Dome "represents only a small portion of Union's involvement in the Wyoming economy. More than 400 Union employees, retirees and shareholders call Wyoming 'home.' Our annual payroll is over $4 million. We like being in Wyoming and will continue contributing to this community for many years to come."

Union maintains operations in 20 oil fields in Wyoming under the supervision of the Casper district office. This district, one of three in the Oil and Gas Division's Central Region, is responsible for operations in parts of 11 Rocky Mountain states. The region encompasses some 30 states.

The Dallas Dome field makes the Central Region a little more venerable than Union Oil Company itself, which won't hit its hundred-year mark until 1990. (Coincidentally, that's also the year Wyoming will achieve 100 years of statehood.)

Murphy's first well was drilled to only 300 feet. This took him into the Chugwater formation, which has since been abandoned. "It didn't take too much of a geologic effort to decide to drill there," according to Bill Flint, district operations manager out of Casper. "The geology is exposed, and the first well was near a seep." The first well was reactivated for the centennial event.

Murphy and those who followed him found more oil pay in deeper formations—the Phosphoria and the Tensleep. The Tensleep, first produced at Dallas in 1930, accounts for 75 percent of the field's production.

The first oil was sold to the railroad for lubricant. Some was sold to local

Fred Hartley — proud to have Union in Wyoming.

Fred Hartley greets Lyal and Jerry Carr.

Today, the field has 70 producing wells.

ranchers to oil their machinery, tar their roofs and keep the dust down in their yards. But these small markets couldn't sustain the field, which faced transport problems for the oil and competition from refined eastern products. The market didn't really expand until America's love affair with the "gasoline buggy" heated up. World War I provided a boost, too.

"A minor industry of the state in 1912, the oil business in 1917 has become second in importance of Wyoming's industrial activities...representing a gross business only four percent less than that of agriculture," said then-Acting Governor Houx. Wyoming's total annual production rose from 1.6 million barrels in 1912 to 13 million in 1918. By 1923, it was up to 44 million.

In explaining the amazing longevity of the Dallas Dome field, Bill Flint offers this theory: The snow melt from the Wind River Mountains seeps into the ground and flows down into the oil reservoir rock. This creates a natural waterflood, keeping pressures fairly constant and the wells producing.

"It makes for a profitable operation," says Flint. "We don't have to spend money injecting water into the field. All we have to do is separate the water from the oil."

Of course, as time goes by the wells produce more and more water with the oil. But the profit margin remains because of the ease of the operation.

Partly because of the increased water, the field has recently undergone some modernization with the installation of new separation equipment and water treatment facilties.

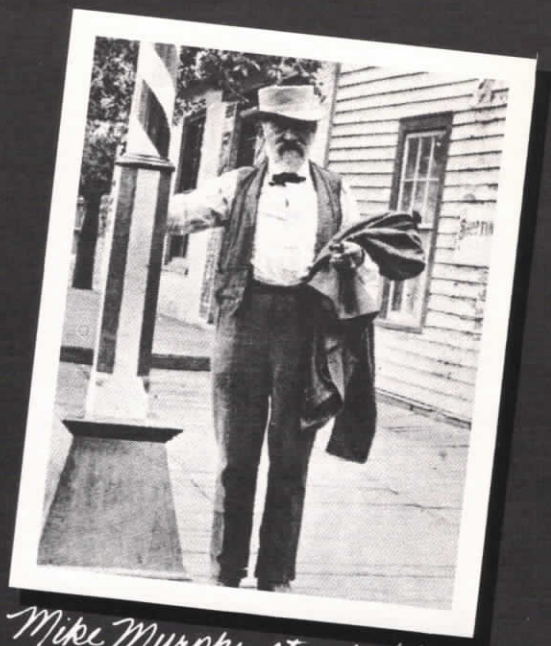
This and the centennial celebration are Bill Flint's last projects at the field. Bill, who is taking on a new assignment as manager of district operations for northern California, is turning over the reins in Casper to Lon Pardue, formerly district production superintendent in the Midland, Texas district office.

One hundred wells have been drilled in the field since its discovery a century ago. Currently, 70 are producing oil. All but one of those wells was drilled using the cable tool method, also called "percussion" or "churn" drilling.

The method has changed very little since the days of Mike Murphy. It involves pounding a hole in the ground, stopping periodically to bail out the crushed rock and hammer the bit back into shape. Less costly than rotary drilling, the method is ideal for low pressure reservoirs like Dallas Dome.

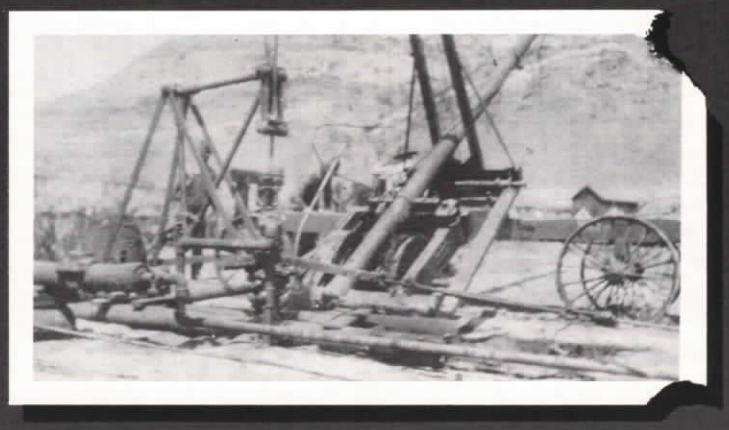
Dallas Dome production, now averaging 350 barrels a day, is expected to continue well into the next century. One of today's producing wells was originally drilled by Mike Murphy. (76)

In the early days, "horsepower" meant just that.



Mike Murphy struck black gold.

A turn-of-the-century well puller.



WILD TIMES AT DALLAS DOME

Lander's 9,000 residents have strong ties to the oil fields that are so important to the area's economy. Jerry Carr, production foreman at Dallas Dome, has worked the field for 21 years. He spent some of his growing-up years at the field when his father, Chester, worked there in the 1930s and '40s. His uncles, Lyal and Elwin, also did their turns. For the last 50 years, Jerry says, one Carr or another has worked at Dallas Dome.

Now, the field is run very efficiently by Jerry and three other men: Clark Lucas, field operator one; Doug Lee, field operator two; and Donald Davison, utility man.

But the crews were larger in the old days. One warm, windy night this spring, a bunch of the oldtimers and their wives gathered in Lander to reminisce. What follows are pieces of their conversation.

Bill Hayes, archivist and registrar for Fremont County's Pioneer Museum, was the organizer. He worked at the Dallas Dome field from 1946 to 1960. In fact, when the camp was dismantled in about 1960, Bill had his house moved into Lander, where he and his wife, Maxine, still reside.

"I worked out there several times, the first was in 1919," said Elwin Carr. "I remember Snake Henriksen. The rye grass out there at Dallas was about that high, you know, and he was the only one who would go down there. He'd take them old rattlesnakes and pop their heads off. They said he went back to Norway, and he took his saddle with him when he got on the boat."

"We were drilling all the time in 1929 and '30, something new—the Tensleep," said Ted Scoggan. "Using cable tool, a 2,000-foot well would take us a couple of months.

Oil markets grew with America's love for the auto.

Circa 1930, when the Tensleep was first drilled.

In 1920, the crew outnumbered today's staff of four.

"This cable tool, this is work," he continued. "Seven-day weeks, 12-hour days, no time off. There were two men per 12-hour shift. Sometimes we'd get a rest if we had to shut down to let the cement set around the pipe, usually for about 36 hours.

"It's very strenuous work. You have a 12-inch bit and you have to hit it with a sledgehammer to get it out to gauge. When you drill with these bits, they get the edges off them and they get too small. If you don't beat them out, the hole won't be big enough to accept the pipe. You beat them probably twice a day, twice in 12 hours.

"Oh, I thought I was strong," Scoggan recalled chuckling. "I weighed 135 pounds and I could swing a 16-pound sledgehammer for an hour without ever slowing down.

"It was no fun, just work. But you got a nice check at the end of the month. I liked that money. Along in '29 and '30, I was making $10 a day. That's big money them days."

It was dirty work, too, since the oil was heavy and black.

"Sometimes Harry would come home covered in oil from head to feet," said Ann Robinson. "I'd take him out in that cellar, get some gasoline and go to work.

"The water would freeze every winter, two or three times under the sink," Ann recalled, thinking of life at the Dallas Dome camp. "It was all right. We were young and things don't bother you when you're young. It was in about 1936 or '37."

Bill Hayes joined the Dallas Dome crew after World War II to work with his friend, Ross Patterson. Patterson was superintendent from 1945 until he and his family were killed in a small plane crash in 1949.

"I worked with Pat while he made up his plans for modernizing the field," Hayes recalled. "We used to sit up every night until 11 o'clock, just as gung ho as could be.

"We'd order half a dozen General Electric motors and wait and wait to get them," he continued. "Finally, we'd end up getting two motors from some manufacturer we'd never heard of, and two from somewhere else. There was just a lot of catching up to do after the war to get the private economy going. We were having to accept substitutes. Of course, Patterson wanted it to be as standardized as possible, anybody would—but that dream just went by the boards."

"We saw those plans take shape very graphically," recalled Francis Barnum with a smile. Barnum, who worked the field in '47 and '48, continued: "We did most of the work that one summer.

The camp -- a good place to raise kids.

Much was modernized in the late '40s.

Preparing to abandon a well.

Electrification improved efficiency.

We were changing over from all that antique power equipment to electricity and modern pump jacks, pulling out all those old wooden pump jacks. Those engines had been there since the turn of the century. Most were gas engines —very antiquated."

"Remember the Thanksgiving Day we were all anticipating a turkey dinner?" Hayes asked. "All the men at the camp were down at Well #55 taking turns trying to start the engine. That was a big water well. If the engine went down and ceased pumping, it would flood out some of the other wells that produced gas. [The gas was used for cooking in the camp houses.]

"So, the men were at Well #55 and the women were up in camp without any way to cook. I remember we had tomato soup that we warmed up on the heating stove in the front room."

"And when the gas went down, you'd have to let the oil from the big drum outside come into the heating stoves," added Irene Brodie. She didn't like to light it because of the loud "whum" that would ensue, but other things were more frightening. (Jack and Irene Brodie and their children lived at the field from 1949 to 1956.)

Irene recalled coming home in the dark one night and hearing a sound that made her think the water was running. She skipped up the porch stairs to switch on a light, and looked back to see that she had come within inches of stepping on a coiled snake. The sound she had heard was rattling, not running water.

"You always had to look before you stepped," she said. "You worried about the kids, but that was probably the closest call. I don't think the snakes usually came around where the people were, and everybody had a dog."

"I must have been younger then," said Maxine Hayes, as Bill treated her to the memory of the copper pipes on the water heater breaking periodically. "And remember when Patterson used to put out a notice: 'Do not iron after 5 o'clock.' If somebody plugged in an iron, all the lights in camp would go out," he added.

Maxine had a vivid memory of finding a bull snake wrapped around her cookie jar. "I screamed," she said. "My son had to take care of it, and he wasn't very big—only about nine."

"There were seven kids living out there with their families at one time," according to Hayes. "About 12 men worked out there in the late '40s. There was some drilling going on."

"We were just going to work and having a good time and raising our families," Hayes said. "I think at one time we had six families in houses and

Drilling circa 1950.

Pumpers receive safety award in 1955.

For a time, oil was pipelined to the railroad.

Dallas Dome field office.

somebody had a trailer."

"It was hard work," he continued, "but you felt you were accomplishing something. And you know, everybody got along pretty good together. They were always pulling practical jokes."

"Remember Willie Boulette?" Barnum asked. "He drove an old Model A Ford. Of course, in those days it wasn't so ancient. The guys run a wire from one of the sparkplugs inside and back up into the seat.

"Well, Willie fired up that old Ford to go home and everybody was standing around to watch him. The engine was missing, and he was choking her and trying to get her to run a little better. He made it about 40 feet before it took effect. He was a big guy, anyway. His head was hitting the top of the Ford. He couldn't get that thing shut down."

"I say," said Elwin Carr, "it was a wild place." (76)

The Great Tar Spring

In 1837, the tar seep that would later inspire Mike Murphy to drill Wyoming's first well was described in Washington Irving's chronicle of the travels of Captain Benjamin Bonneville. The captain, heading a government expedition to explore the Rocky Mountains, found the seep in 1833 as he followed the Little Popo Agie River:

In this neighborhood, the captain made search for "the great Tar Spring," one of the wonders of the mountains; the medicinal properties of which, he had heard extravagantly lauded by trappers. After a toilsome search, he found it at the foot of a sand-bluff, a little to the east of the Wind River Mountains, where it exuded in a small stream of the color and consistency of tar. The men immediately hastened to collect a quantity of it, to use as an ointment for the galled backs of their horses, and as a balsam for their own pains and aches.

From the description given of it, it is evidently the bituminous oil, called petrolium [sic] or naphtha, which forms a principal ingredient in the potent medicine called British Oil. It is found in various parts of Europe and Asia, in several of the West India islands, and in some places of the United States. In the state of New York, it is called Seneca Oil, from being found near the Seneca Lake. (76)

On the Road With The Great American Race

We're in the central square of a small midwestern town. It's one of those bright, perfect spring afternoons, and people are everywhere: sprawling out on blankets in the grassy park, crowding the sidewalks, leaning out of open office windows. The hubbub of laughter and conversation is augmented by the town Glee Club, harmonizing away on the courthouse steps. The wonderful aromas of barbeque beef and grilled hot dogs waft through the air, impossible to resist.

"Here they come!" yells a kid from his perch up in the branches of a tall oak tree. Moments later, a trio of rather unlikely automobiles rounds the corner: a bright red, open-air 1936 Bentley Speedster, manned by two figures in goggles and leather racing helmets; an immense navy blue 1930 V-16 Cadillac; and a shiny brown, canvas-topped 1930 Model A Ford, containing a pair of sprightly senior citizens who smile and wave greetings.

As the cars roll to a stop, the crowd presses forward—cheering, applauding, and snapping camera shutters. Soon several more antique vehicles come tooling into town, one after the other. Among them is a screaming red 1912 fire engine, complete with varnished wooden ladders, polished bronze accoutrements, and a five-man crew. The truck roars in with lights flashing and sirens blaring, delighting the onlookers.

No, this isn't a scene from "The Music Man." It's May 24, 1984, and the Great American Race is wheeling into Bloomington, Illinois. Over the

past eight days, this same joyful reception has been played out in towns across the country, as dozens of antique autos have made their way east from Los Angeles. Final destination: Indianapolis, where the drivers and navigators will parade their cars around the track at the historic Motor Speedway prior to the Indy 500.

Much more is at stake than a victory lap, however, for this rolling museum of Americana is actually one of the richest auto races in the world. The 87 participants (pared down to 70 by the time they reached Bloomington) are vying for over $250,000 in prize money—$100,000 of which will go to the winning car alone.

Now in its second year, the Great American Race (G.A.R.) is a nine-day, 3,000-mile event limited to antique cars of pre-1937 vintage. Rather than being a speed race, the G.A.R. is a time/speed/distance rally that stresses precision driving and navigation. At the beginning of each day, drivers and their navigators are given detailed instructions for the day's prescribed route and speeds (never to exceed 50 m.p.h.). Participants are monitored at surprise checkpoints along the way, and are scored based on how close they come to matching the pre-determined times.

Use of calculators, electronic watches, and odometers is forbidden during the race, with only wind-up stopwatches allowable for timing. Since every second counts (last year's winner was a mere 90 seconds off for the entire 3,000-mile race), something as simple as a missed turn can be disastrous.

Excellent driving skills are essential in the G.A.R., as is a navigator with a keen eye for landmarks and the ability to translate detailed written instructions into quick verbal commands. Most entrants also have support crews who travel ahead of the pack, carrying tools and spare parts. In this year's race, some of the crews have been forced to work through the night on occasion to keep their temperamental antique cars running.

Not so Urb and Helen Stair and their crew. Sponsored by Union Oil, the Stair's "Spirit of *76*" 1930 Model A Ford—the third car to wheel into Bloomington—has been running like a top ever since leaving L.A. "We've only had one flat tire and a minor starter

The Great American Race: temperamental old cars, a grueling pace, joyful receptions and super camaraderie. Far left: "The Spirit of 76" wheels into Bloomington, Illinois.

problem so far," Urb tells one of the admiring spectators. "It's pretty unbelievable."

Perhaps not to those who know Urb and Helen Stair. The oldest couple in the race (at 70 and 68), they have made believers of any who doubted that this pair could handle the rigorous pace and exacting demands of the G.A.R. Coming into this day's segment, the Stairs—driving in their first ever road rally—had a score that placed them in the top half of the pack. Considering that many of the drivers are experienced ralliers (some even employ professional rally navigators), the Stairs' performance is even more impressive.

"I'm certainly not the world's greatest navigator," Helen says, as the pair make their way to Bloomington's town hall for a fried chicken lunch. "But we haven't missed a turn yet. I think we're doing pretty well for a couple of novices."

Due largely to Urb Stair's automotive expertise, the "Spirit of 76" has performed almost flawlessly over the 2,500-plus miles between L.A. and Bloomington. "Urb doesn't drive the car—he wears it," Helen explains. "If anything is going to go wrong, he'll know about it before it happens."

A retired petroleum engineer from Whittier, California, Urb is a former race car driver and a lifelong antique car enthusiast. In recent years he has completely rebuilt several Model T and Model A Fords. It took him just eight months to build the "Spirit of 76."

"The car was built entirely from junk parts I found at swap meets in California," he says. "All except the front fenders. I had to send to Ohio for those."

Since he completed work on it back in 1978, Urb has driven the car over 25,000 miles and entered it in numerous antique car shows. It has won a dozen trophies, and you can easily see why. Polished to a high sheen and purring like a kitten when it's idling, the handsome Model A looks as if it just rolled off the assembly line.

What made the Stairs decide to enter this beauty in such a grueling cross-country race? "Mainly for the thrill of doing something new and different," Urb explains. "We're not really in this to win. We're in it for the experience."

"It's really been a wonderful time,"

Far right, top: Eventual winners John Classen and Gary Wales acknowledge the cheering crowd. Far right, bottom: The Stairs prepare to head out after lunch in Bloomington. "We're doing pretty well for a couple of novices."

Helen adds. "The camaraderie among the racers has been super. And the reception we've had from people across the country has been just amazing."

Indeed, the spectacle of more than 70 antique cars rolling down Main Street has proved quite an event for the cities and towns the G.A.R. has passed through. Everywhere, people have flocked to see the cars, and many towns have done much more. Flagstaff, Arizona greeted the racers with a pancakes and sausage brunch. The people of Wichita Falls, Texas provided homemade ice cream and cookies. The Navajo Tribal Band and Dancers performed for the racers in Gallup, New Mexico, and the town's local seniors' club presented Urb and Helen with special turquoise pins.

"This is the real America," Helen Stair says of the hospitality. "Not the things you read on the front page of the papers."

Exactly 45 minutes after arriving in Bloomington (even lunch stops are strictly timed), the Stairs are back in their car ready to head on to Chicago, the last overnight stop before the race's finish in Indianapolis. As Urb warms up the Model A's engine, Helen resets her stopwatch and checks the next page of instructions. Down the street two more cars are just pulling into town: a 1902 Mercedes—the oldest car in the race—and an eye-catching, mink-upholstered 1928 Rolls Royce.

"What's been the hardest part of the race so far?" someone asks Urb.

"Bumps," he replies, smiling. "You really feel those bumps in a Model A."

Moments later the starter waves the green flag, the crowd cheers, and the "Spirit of 76" is off, with horn tooting, headed for the Windy City.

POSTSCRIPT: The following day, the Stairs successfully completed the final leg of the Great American Race. Sixty-nine of the 87 cars entered finished the race, which was won by Gary Wales and John Classen of Woodland Hills, California, drivers of the 1936 Bentley Speedster. They finished four minutes and 50 seconds shy of a perfect score.

The Stairs finished 44th, 30 minutes and 41 seconds off the pace. They plan to enter the race again next year. (76)

Service Awards

UNION 76

CORPORATE

July 1984

35 YEARS	**Howard N. LaPierre,** Union Oil Center
30 YEARS	**George Karapetian,** Union Oil Center
25 YEARS	**Helga E. Deeke,** Union Oil Center **Duane C. Wiechmann,** Schaumburg, Il.
20 YEARS	**Wayne H. Maxwell,** Union Oil Center
15 YEARS	**Robert C. Allison,** Houston, Tx. **John A. Farquhar,** Los Angeles, Ca. **Lidia E. Mendez,** Union Oil Center
10 YEARS	**Joe G. Gonzalez,** Union Oil Center **James F. Lloyd,** Union Oil Center **Neal A. Pepper,** Union Oil Center
5 YEARS	**James S. Du,** Union Oil Center **Daniel W. Dukes,** Union Oil Center **Leslie E. Lilly,** Union Oil Center **Vivian M. Pedroza,** Union Oil Center **Alvin B. Perry,** Union Oil Center **Sylvia J. Slocum,** Pasadena, Ca. **Newell A. Stevens,** Union Oil Center

August 1984

30 YEARS	**Robert L. Humphrey,** Union Oil Center **Robert F. McClatchey,** Los Angeles, Ca.
20 YEARS	**Ross P. Connelly,** Santa Fe Springs, Ca. **Diana C. Hyland,** Union Oil Center
15 YEARS	**Eleanor E. Cuneo,** Union Oil Center **Catherine O. Gard,** Schaumburg, Il. **Bernice Young,** Union Oil Center
10 YEARS	**Jame B. Blair,** Union Oil Center **Dennis P.R. Codon,** Union Oil Center **Shirley J. Dodson,** Union Oil Center
5 YEARS	**Velia Bustamante,** Union Oil Center **Ingrid D. Impink,** Washington, D.C. **Efrem C. Powell,** Union Oil Center

UNION SCIENCE AND TECHNOLOGY DIVISION

July 1984

40 YEARS	**William Showalter,** Brea, Ca.
35 YEARS	**William C. Lieffers,** Brea, Ca.
30 YEARS	**Ryden L. Richardson,** Brea, Ca.
20 YEARS	**John D. Crandall,** Brea, Ca.
15 YEARS	**Douglas W. Brink,** Brea, Ca. **Dennis J. Brumback,** Brea, Ca. **Neal C. Burmaster,** Brea, Ca. **Wilbur G. Herman,** Brea, Ca. **Kenneth E. Whitehead,** Brea, Ca.
10 YEARS	**Gregory E. Brooks,** Brea, Ca. **Nathan H. Carpenter,** Brea, Ca.
5 YEARS	**Lisa A. Bowden,** Brea, Ca. **Gaile M. David,** Brea, Ca. **Merton E. Hill,** Brea, Ca. **James D. Mercer,** Brea, Ca. **Huyen N. Phan,** Brea, Ca. **Barbara L. Whitney,** Brea, Ca.

August 1984

30 YEARS	**Robert H. Hass,** Brea, Ca.
20 YEARS	**John R. Fox,** Brea, Ca.
15 YEARS	**Robert G. Love,** Brea, Ca. **Robert E. Miller,** Brea, Ca. **Milan Skripek,** Brea, Ca. **Gladys V. Woolf,** Brea, Ca.
10 YEARS	**Robert L. Russell,** Brea, Ca. **Gregory F. Wirzbicki,** Brea, Ca.
5 YEARS	**Susan E. Buttera,** Brea, Ca. **Thomas L. Elliott,** Brea, Ca. **Fernando A. Gallard,** Brea, Ca. **Shirley M. Lemoine,** Brea, Ca. **James B. Reed,** Brea, Ca. **Ruby Scott,** Brea, Ca. **Steven R. Tarbox,** Brea, Ca. **John V. Yeiral,** Brea, Ca. **Mohammad Zabihi,** Brea, Ca.

UNION REAL ESTATE DIVISION

July 1984

35 YEARS	**Robert F. Koch,** Union Oil Center
15 YEARS	**Russell E. Gray,** Union Oil Center

UNION 76 DIVISION

July 1984

40 YEARS	**Charles Burk,** Los Angeles Refinery **Alfred H. Sweet,** Los Angeles Refinery
35 YEARS	**Max A. Bradberry,** Beaumont Refinery **Robert A. Campbell,** Beaumont Refinery **Peter D. Fisler,** Schaumburg, Il. **David V. Fulton,** Chicago Refinery **William G. Gibbs,** Beaumont Refinery **James W. Gibson,** Beaumont Refinery **Dan M. Harrell,** Beaumont Refinery **Gene C. Kinser,** Richmond, Ca. **Bill McCloud,** Knoxville, Tn. **Harold L. Reed,** Pure Transportation Co., Olney, Il. **Edward M. Wilson, Jr.,** Schaumburg, Il.
30 YEARS	**Harry L. Anderson,** Schaumburg, Il. **Evelyn M. Burnley,** Los Angeles, Ca. **Thomas E. Davini,** San Francisco, Ca. **Ronald B. Graves,** San Francisco Refinery **Hershel L. Hanley,** Beaumont Refinery **Dorothy L. Madsen,** Schaumburg, Il. **Norman H. Miller,** San Francisco Refinery **Gale E. Newton,** San Francisco, Ca. **Hendrik Vrielink,** Schaumburg, Il. **Ralph H. Wills,** Schaumburg, Il.
25 YEARS	**Robert K. James,** Minneapolis, Mn. **Charles C. Row,** Los Angeles, Ca. **Geraldine C. Scheffels,** Los Angeles, Ca. **James H. Turnipseed,** Los Angeles, Ca.
20 YEARS	**Donald L. Chaffin,** Los Angeles, Ca. **Donald L. Fields,** Santa Maria, Ca. **Edythe J. Jackson,** Sacramento, Ca. **Erich A. Kroening,** Milwaukee, Wi. **Ronald J. Mertz,** Atlanta, Ga. **Paul F. Siebert,** Schaumburg, Il. **K. E. Waegner,** Schaumburg, Il. **Fielding L. Walker, IV,** Schaumburg, Il.
15 YEARS	**Ernest B. Blickers,** Schaumburg, Il. **Cathy W. Byerly,** Charlotte, N.C. **Mary Edjuana Chumley,** Atlanta, Ga. **Douglas N. Denton,** Los Angeles Refinery **Ethel A. Hagen,** Tukwila, Wa. **Larry J. Lubbers,** Richmond, Ca. **John H. Maize,** Los Angeles Refinery **Jim D. Marks,** San Francisco Refinery **Heinke Martin,** Richmond, Ca. **Floyd W. McCormick,** Beaumont Refinery **Maxine R. Murphy,** Schaumburg, Il. **Glenn M. Nakaguchi,** Los Angeles, Ca. **Henry A. Norris,** Beaumont Refinery **Joseph A. Puentes,** San Francisco Refinery **Russell L. Richards,** Los Angeles, Ca. **Raymond Rodriquez,** Beaumont Refinery **William C. Smith,** Schaumburg, Il. **Joseph P. Spruill,** Schaumburg, Il. **Richard C. Suk,** Schaumburg, Il. **A. C. Urbas,** Schaumburg, Il. **Larry J. Weathers,** San Francisco Refinery

10 YEARS
Eduardo F. Armenta, Tucson, Az.
Edward W. Birnbaum, Schaumburg, Il.
Noel C. Boretti, Schaumburg, Il.
Hattie L. Bradley, Chicago Refinery
Carolyn S. Chinderle, Chicago Refinery
Patricia E. Cornett,
San Francisco Refinery
Samuel W. Dennis, Los Angeles, Ca.
Judith A. Falco, South Holland, Il.
Lawrence A. Fullerton, Americus, Ga.
Joseph Garcia, Los Angeles Refinery
Rudy T. Gonzales, Los Angeles Refinery
William T. Hanus, Chicago Refinery
Benedict W. Kekuewa, Honolulu, Hi.
Dorothy Langill, Los Angeles, Ca.
H. Roland Melvin, Chicago Refinery
Jose T. Nazareno, Los Angeles Refinery
Chester E. Olson, San Francisco Refinery
Perry E. Parker, Chicago Refinery
Hansel Torrence, Jr. Atlanta, Ga.
Susan J. Valentine, Schaumburg, Il.
John L. Ward, Chicago Refinery
Keith L. Wilson, Chicago Refinery
Roland Wilson, McKittrick, Ca.
Peter R. Woodward,
San Francisco Refinery

5 YEARS
Maria M. Aqui, San Francisco, Ca.
Anthony P. Armstrong,
Los Angeles, Ca.
Michael L. Beasy, Los Angeles, Ca.
Earle J. Beesley, Ketchikan, Ak.
Hugh Carter, San Francisco, Ca.
Jo Ann Consolo, Los Angeles, Ca.
Michael S. Dong, Spokane, Wa.
Leslie J. Fejer, Los Angeles Refinery
Gerald E. Gordon, Los Angeles Refinery
Phillip H. Hanford, Spokane, Wa.
Robert L. Harris, Los Angeles Ca.
Rebecca Y. Hayes, Los Angeles Refinery
David B. Huckabay, San Francisco, Ca.
Curtis J. Jelks, Los Angeles, Ca.
Anthony G. Jones, San Francisco, Ca.
Elliott E. Justice, Los Angeles, Ca.
Mary A. Kelley, San Diego, Ca.
Sixto S. Laxa, San Francisco, Ca.
Phyllis J. Luedtke, Schaumburg, Il.
Ursula H. McNicol, Los Angeles, Ca.
Gene J. Mosbrucker, Portland Or.
Shirley M. Nichols, Edmonds, Wa.
Michael A. O'Connor, Chicago Refinery
Patricia A. Paolicchi, Chicago Refinery
Michael L. Peralta, San Francisco, Ca.
Candace S. Phillips,
Los Angeles Refinery
Rolando D. Santos, San Francisco, Ca.
Carl R. Skager, Beaumont Refinery
Dina A. Slobodnink, San Francisco, Ca.
Richard Teran, Los Angeles Refinery
Carmen M. Tuazon, San Francisco, Ca.
Arthur D. Walter, Taft, Ca.
Marie E. Wilson, San Diego, Ca.
Virginia R. Woods, Chicago Refinery

August 1984

40 YEARS
Jesse C. Avila, San Francisco Refinery

35 YEARS
Chris J. Dovalis, Minneapolis, Mn.
Robert D. Godwin, Los Angeles, Ca.
Richard C. Ingels, Los Angeles, Ca.
Thomas H. Johnson, Jr.,
Beaumont Refinery
Frank G. Mewborn, Jr.,
Schaumburg, Il.
Albert M. Morrison, Atlanta, Ga.
Oscar F. Noss, Santa Maria Refinery
Ted R. Wisener, Beaumont Refinery

30 YEARS
Richard L. Fitzpatrick, Athens, Ga.
John G. Mertz, Schaumburg, Il.
William D. Nordlund, Birmingham, Al.
H. David Tupper, Los Angeles Refinery

25 YEARS
William E. Carson, Tallmadge, Oh.
Thomas L. Freer, Los Angeles Refinery
Dennis C. Harrod, Schaumburg, Il.
Nancy F. Jencks, Schaumburg, Il.
W. L. Marquardt, Los Angeles Refinery
Kenneth W. Pearson, Schaumburg, Il.
Norman L. Schwenk,
Los Angeles Refinery

20 YEARS
James L. Ashlock, Seattle, Wa.
George R. Fulton, Jr.,
Beaumont Refinery
Billy S. Roberson,
Pure Transportation Co., Van, Tx.
Maria V. Teubert, Los Angeles, Ca.
Ronald L. Wolf, Schaumburg, Il.

15 YEARS
Nancy A. Aguilera, Los Angeles, Ca.
Kenneth H. Anderson, Richmond, Ca.
Anthony C. Ballard,
San Francisco Refinery
Warren W. Blackburn,
San Francisco Refinery
Linda L. Bricker, Schaumburg, Il.
Patrick W. Dennis, Los Angeles, Ca.
Theo Devers, Richmond, Ca.
William A. Ewing,
San Francisco Refinery
Galen Hanes, San Francisco Refinery
Willis R. Joyner, Jr., Schaumburg, Il.
William J. Mathis, III, Birmingham, Al.
Eugene T. Paulick, Schaumburg, Il.
Frederick J. Sargent, Wildwood, Fl.
Herman R. Stewart, Cleveland, Oh.
William H. Troyer, Schaumburg, Il.
Alice M. Vincent, Seattle, Wa.
Dimitry O. Vishnevsky,
Los Angeles Refinery

10 YEARS
David A. Ball, San Francisco Refinery
Darleen M. Bateman, Los Angeles, Ca.
Harry E. Bell, Los Angeles, Ca.
Michael W. Black, Los Angeles Refinery
Patrick K. Chandler,
San Francisco Refinery
Janet L. Cox, Schaumburg, Il.
Karen McGilluray Edwards,
Seattle, Wa.
Gaylon Grant, San Francisco Refinery
Larry E. Jones, San Francisco Refinery
Teresa M. Kelly, Schaumburg, Il.
James C. King, Macon, Ga.
Dennis T. Nakamura,
Santa Maria Refinery
Christine M. Pearson,
San Francisco, Ca.
Leland R. Pentecost, Los Angeles, Ca.
Kathryn L. Prokuski, Schaumburg, Il.
Marcia A. Ruopp, Schaumburg, Il.
Jerry R. Smith, San Francisco Refinery
Brian Y. Sugita, Los Angeles Refinery
David H. Williams,
San Francisco Refinery
Paul B. Williams, Edmonds, Wa.

5 YEARS
Susan Arcia, San Francisco, Ca.
Kenneth R. Barton III,
Los Angeles, Ca.
Dennis A. Bennett,
San Francisco Refinery
Deborah A. Birdwell,
San Francisco Refinery
Delphine Blakely, Richmond, Ca.
Ann L. Brandt, Los Angeles, Ca.
Laurie Brown, Schaumburg, Il.
Douglas W. Carter,
San Francisco Refinery
Susan N. Carter, Columbus, Oh.
Robert M. Castillo, Santa Maria Refinery
Monika Y. Chow, Portland, Or.
Michael J. Desisto, Los Angeles Refinery
Mary E. Dinisi, Los Angeles, Ca.
Teresa M. Donlon, Schaumburg, Il.
Carla M. Drew, Schaumburg, Il.
Benjamin P. Esparza,
Los Angeles Refinery
Evelyn Fiers, San Francisco, Ca.
Karen R. Flores, San Francisco, Ca.
F. Brandon Fojtik, Chicago Refinery
Gale M. Gangi, Schaumburg, Il.
Ramon Garcia, Chicago Refinery
Michael L. Hickenbottom,
Chicago Refinery
Charlene Hicks, Chicago Refinery
Kenneth I. Hunter,
Los Angeles Refinery
David T. Johnson, Los Angeles Refinery
Frank E. Kamradt, Chicago Refinery
Robert W. Konieczko, Beaumont, Tx.
Denis S. Kramer, Chicago Refinery
Susan M. Lakeberg, South Holland, Il.
Kenneth A. Larson, Chicago Refinery
Ann M. Lopez, San Francisco, Ca.
Kelly H. Murphy, Phoeniz, Az.
George L. Newberg, Chicago Refinery
Earlene F. Nightengale, Wildwood, Fl.
Dexter W. Owens, San Francisco, Ca.
Rick E. Paulsen, Schaumburg, Il.
Bruce M. Powers, Los Angeles Refinery
Dennis J. Pransky, Chicago Refinery
Devon L. Rathbun, Los Angeles, Ca.
Ronnie E. Roush, Chicago Refinery
Paul L. Schrader, San Francisco Refinery
Michael L. Spraggs, South Holland, Il.
Patricia M. Sullivan, San Diego, Ca.
Nelia L. Teneza, San Francisco, Ca.
Lien T. Tran, San Francisco, Ca.
Kenneth I. White, Chicago Refinery

UNION OIL AND GAS DIVISION

July 1984

35 YEARS
Richard K. Thomas, Olney, Il.

30 YEARS
Milton S. Oliver, Santa Paula, Ca.

20 YEARS
Benjamin T. Brown, Houston, Tx.
James R. Callender, Anchorage, Ak.
David R. Hill, Anchorage, Ak.
Jimmie A. Hurt, Oklahoma City, Ok.
Richard C. Keller, Pasadena, Ca.
Harry F. Kelly, Santa Fe Springs, Ca.
Murphy J. Pellegrin, Jr., Houma, La.

15 YEARS
Dennis F. Buckley, Cutbank, Mt.
John W. Shastid, Ventura, Ca.

10 YEARS	**Gary D. George,** Casper, Wy. **Thomas W. Grimm,** Brea, Ca. **Norma K. Kinney,** Anchorage, Ak. **Byron P. Nanini,** Cutbank, Mt. **Paul W. Neubauer,** Worland, Wy. **Carl W. Patridge, Jr.,** W. Liberty, Il. **Jan E. Quilty,** Jackson, Ms. **Barbara A. Shannon,** Ventura, Ca.
5 YEARS	**Louis A. Berlin,** Casper, Wy. **Philip A. Davis,** Anchorage, Ak. **Glen M. Gatenby,** Lafayette, La. **Roger D. Hebert,** Houma, La. **Gregory T. Leyendecker,** Anchorage, Ak. **George A. Livesay,** Midland, Tx. **Kenneth J. Lucas,** Anchorage, Ak. **Dale A. Njaa,** Anchorage, Ak. **Jeffrey S. Nutter,** Houston, Tx. **George R. Pruitt, III,** Lafayette, La. **Maraley J. Shaeffer,** Pasadena, Ca. **Kevin A. Tabler,** Anchorage, Ak. **Marie C. Wakefield,** Pasadena, Ca. **Larry W. Weaver,** Mobile, Al. **Fred E. Young,** Ventura, Ca.

August 1984

35 YEARS	**Max A. Ervin,** Houston, Tx. **Gerald E. Hall,** Houston, Tx. **Carl E. Newgreen,** Union Oil Center **Earl O. Roussel,** Bakersfield, Ca.
30 YEARS	**Leonard J. Anderson, Jr.,** Union Oil Center **Willis E. Hobbs,** Houston, Tx. **Dean H. Upchurch,** Orcutt, Ca.
25 YEARS	**Wallace W. Lovell,** Lafayette, La. **Gaylord N. Richmond,** Santa Fe Springs, Ca. **Barbara A. Yarbrough,** Union Oil Center
20 YEARS	**James R. Adams,** Houma, La. **Walter S. Bridges,** Houma, La. **David L. Cone,** Santa Fe Springs, Ca. **E. Alonzo Flores,** Houston, Tx. **Robert W. Whitney,** Houma, La. **Edward A. Wilson,** Van, Tx.
15 YEARS	**George J. Martin,** Lafayette, La. **Eugene Mercado,** Worland, Wy. **Joseph C. Smith, Jr.,** Van, Tx. **Arthur V. Verrett,** Houma, La.
10 YEARS	**Ronald E. Booker,** Orcutt, Ca. **Joe A. Tristan,** Brea, Ca.
5 YEARS	**Edward J. Boufford,** Ganado, Tx. **Linda W. Carter,** Anchorage, Ak. **Josie R. Davis,** Midland, Tx. **Jarvis C. Duke,** Jackson, Ms. **David P. Eichen,** Ventura, Ca. **Brenda D. Geske,** Bakersfield, Ca. **George S. Harris,** Jackson, Ms. **Bob D. Hunt,** Taft, Ca. **Randall Kalton,** Orcutt, Ca. **Gordon F. Kitchens,** Ganado, Tx. **Wayne F. Leboeuf,** Houma, La. **Clayton C. Leischer,** Olney, Il. **Greg H. Meaux,** Lafayette, La. **Gary M. Melsopp,** Santa Fe Springs, Ca. **Pamela J. Perry,** Orcutt, Ca. **Reggie L. Shook,** Oklahoma City, Ok. **Bonnie D. Smith,** Lafayette, La.

UNION GEOTHERMAL DIVISION

July 1984

20 YEARS	**Judith M. Hughes,** Union Oil Center
10 YEARS	**Betty A. Lessnau,** Santa Rosa, Ca.
5 YEARS	**Marilyn R. Ashe,** Santa Rosa, Ca. **Dana J. Brock,** Santa Rosa, Ca. **Steven L. Enedy,** Santa Rosa, Ca. **Mary L. Flores,** Imperial Valley, Ca. **Richard H. Flowers,** Imperial Valley, Ca. **Ron S. Maxwell,** Imperial Valley, Ca. **J. Michael McNamara,** Santa Rosa, Ca.

August 1984

10 YEARS	**Jack Hangan,** Jakarta, Indonesia **Wilda Spady,** Santa Rosa, Ca.
5 YEARS	**Richard DiTommaso,** Santa Rosa, Ca. **Bobby E. Halman,** Jakarta, Indonesia

PHILIPPINE GEOTHERMAL, INC.

July 1984

5 YEARS

Edilberto M. Alvarez, Manila
Francisco B. Balleras, Jr., Manila
Purito M. Barquez, Manila
Ramon A. Barreda, Manila
Romeo M. Bautista, Manila
Titus B. Bermundo, Manila
Iniego B. Binalla, Manila
Rolando B. Binamira, Manila
Hernando C. Borbor, Manila
Serio C. Brucales, Manila
Milanio C. Canale, Manila
Beltran A. Canales, Manila
Bonifacio C. Candolea, Manila
Gregorio B. Cantes, Manila
Oferio C. Carino, Manila
Benjamin E. Carito, Manila
Guillermo O. Carpio, Manila
Godofredo R. Cas III, Manila
Rustico C. Catolico, Manila
Miguel C. Cellona, Manila
Bienvenido C. Celorico, Manila
Solomon R. Cenit, Manila
Jose C. Cerdeno, Manila
Gerundio B. Cernechez, Manila
Wenifredo C. Cilo, Manila
Florencio C. Cirio, Manila
Tomas V. Ciruelos, Manila
Rodolfo C. Cirujales, Manila
Solano T. Clapis, Manila
Rogildo S. Caludio, Manila
Arnulfo N. Clerigo, Manila
Elias B. Clutario, Manila
Saturnino D. Clutario, Manila
Jesus V. Colina, Manila
Ramon B. Collao, Manila
Jose C. Competente, Manila
Rodrigo C. Consuegra, Manila
Jaime C. Cope, Manila
Jose M. Cornel, Manila
Senen C. Corral, Manila
Jesus C. Corteza, Manila
Jenny C. Cos, Manila
Celso C. Costrua, Manila
Felipe C. Credo, Manila
Mario C. Crisol, Manila
Diosdado B. Cruz, Jr., Manila
Teotimo C. Cruz, Manila
Teresa B. Cruz, Manila
Romulo C. Dacillo, Manila
Vicente C. Dacir, Manila
Dominador C. Dacoco, Manila
Onofre C. Dacuya, Jr., Manila
Rogelio D. Dacuya, Manila
Eleuterio C. Dalde, Manila
Jesus A. Datun, Manila
Joel C. de Guzman, Manila
Julieta De Castro, Manila
Vicente P. de Vera, Manila
Lorenzo C. Deocareza, Manila
Solomon D. Dupaya, Manila
Pamela J. Eliot, Manila
Romeo D. Elizan, Manila
Antonio E. Enconado, Manila
Leopoldo L. Endaya, Manila
William A. Fajardo, Manila
Mario D. Fernandez, Manila
Pio R. Flores, Manila
Andres B. Galang, Manila
Domingo S. Gapit, Manila
Amelia R. Jaurique, Manila
Bernardino C. Lana, Manila
Benedicto M. Lapitan, Manila
Aurelio D. Lovedorial, Manila
Avelino D. Lovedorial, Manila
Eleuterio B. Magayanes, Manila
Floro R. Malihan, Manila
Danilo G. Mayuga, Manila
Pablito C. Montalban, Manila
Emmanuel A. Mostrado, Manila
Rey C. Nacion, Manila
Ariston P. Narvaja, Manila
Leopoldo L. Nodalo, Jr., Manila
Danilo M. Palla, Manila
Narciso G. Panganinan, Manila
Herman C. Patriarca, Manila
Ma. Victoria C. Rayos, Manila
Rufo A. Rosellon, Manila
Jesus C. Salazar, Manila
Segundo B. Sapo, Manila
Francisco S. Segubiense, Manila
Alexis R. Sevilla, Manila
Gil G. Torrecampo, Manila
Abner M. Villegas, Manila
Guillermo M. Villegas, Manila
Antonio F. Yee, Manila

August 1984

5 YEARS — **Felix C. Abejero,** Manila
Rolando B. Buena, Manila
Wilhelmino Q. Lim, Manila
Jose B. Palma, Manila

UNION CHEMICALS DIVISION

July 1984

35 YEARS — **Vernon A. Clark,** Kansas City, Mo.

25 YEARS — **Albert F. Schroeder,** Rolling Meadows, Il.
Robert L. Whittaker, Brea, Ca.

20 YEARS — **Leland S. Pierson, Jr.,** Union Oil Center

15 YEARS — **Gerard A. DeBeau,** La Mirada, Ca.
Michael L. Ghareeb, West Sacramento, Ca.
David Hansen, Newark, Ca.
Leonard W. Shirah, Charlotte, N.C.
John H. Snyder, Jr., Atlanta, Ga.

10 YEARS — **Andrew B. Christenbury,** Charlotte, N.C.
Jerry F. Corcoran, Kenai, Ak.
Varble R. Darrow, Kenai, Ak.
William V. Gollhofer, West Sacramento, Ca.
Duane J. Latta, Kenai, Ak.
Nancy C. McIntyre, Brea, Ca.
Rodolfo G. Villegas, La Mirada, Ca.

5 YEARS — **Gregory S. Acker,** La Mirada, Ca.
Christopher A. Caldwell, Charlotte, N.C.
Melvyn L. Jackson, Beaumont, Tx.
Judy L. Love, Charlotte, N.C.
Charles W. Mettille, Kenai, Ak.
Laurie A. Minarcik, Schaumburg, Il.
Daniel B. Reuben, Schaumburg, Il.
Thomas A. Senne, Charlotte, N.C.
Daphne T. Stowe, Atlanta, Ga.
Martin A. Thrower, Charlotte, N.C.

August 1984

30 YEARS — **Emily J. Helm,** Birmingham, Al.
Charles R. Hunter, Brea, Ca.
Roy W. Roach, Kansas City, Mo.
Robert J. Wagner, Schaumburg, Il.

25 YEARS — **Byron L. Coker,** Tucker, Ga.
Bruce E. Faaborg, Oakland, Ca.
William J. Hammond, Charlotte, N.C.
Leighton Helm, Brea, Ca.
Harold S. McCall, Brea, Ca.

20 YEARS — **Freddie L. Harry,** Charlotte, N.C.
Myron W. Wolansky, Clark, N.J.

15 YEARS — **Normand L. Blais,** E. Providence, R.I.
Charles B. Dudley, Schaumburg, Il.
David R. Norby, Boise, Id.

10 YEARS — **Wesley P. Baldock,** Kenai, Ak.
Julie Ann Bloomquist, Portland, Or.
Edward L. Bowman, Atlanta, Ga.
Dennis J. Deck, La Mirada, Ca.
John C. Montoya, Brea, Ca.
Ralph F. Rea, Arroyo Grande, Ca.
William R. Yankie, Jr., Union Oil Center

5 YEARS — **Edwin F. Akins, Jr.,** Chicago, Il.
Rosalyn K. Atkins, Atlanta, Ga.
James W. Boettger, Schaumburg, Il.
Rodney L. Gilge, Kenai, Ak.
Pauline E. Goecke, Kenai, Ak.
James F. Grobarcik, Chicago, Il.
Thomas V. Hodgkins, Jr., Portland, Or.
James R. Phillips, Atlanta, Ga.
Yvette Richardson, Union Oil Center
Robert A. Salvetti, Rodeo, Ca.
Russell K. Small, Union Oil Center
Jerry L. Willmore, Kenai, Ak.

UNION INTERNATIONAL OIL DIVISION

July 1984

35 YEARS — **Robert R. Roethke,** Los Angeles, Ca.

10 YEARS — **Arthur M. Bracci,** Balikpapan, Indonesia
Patrick H. Malue, Balikpapan, Indonesia
Carl F. Hills, Los Angeles, Ca.
Keith G. Lindsell, London, England

5 YEARS — **Keith Brown,** Aberdeen, Scotland
Beryl R. McCormack, Balikpapan, Indonesia
Morgan R. Quennell, Aberdeen, Scotland

August 1984

35 YEARS — **Ornald L. Gambrell,** Jakarta, Indonesia

15 YEARS — **John E. Sherborne, Jr.,** Los Angeles, Ca.
Roy T. Tatar, Los Angeles, Ca.

10 YEARS — **Karen P. Lenik,** Los Angeles, Ca.

5 YEARS — **David A. Duncan,** The Hague, Netherlands
Martha Joanne Hall-Burr, Los Angeles, Ca.
Donnie L. Layton, Balikpapan, Indonesia
Su-Chu Lo, Los Angeles, Ca.

UNION OIL OF GREAT BRITAIN

January 1984

5 YEARS — **D. J. Oswald,** Scotland

February 1984

5 YEARS — **A. McFarlane,** Scotland
J. Thompson, Scotland

July 1984

10 YEARS — **A. N. Cook,** England
Joan Elphinstone, England
Tony Hands, England
Rosemary Sanders, England

5 YEARS — **Pam Hayle,** England

August 1984

5 YEARS — **G. A. Phillips,** Scotland

UNION OIL CO. OF INDONESIA

January 1984

15 YEARS — **Sukri Bin Saidan**

10 YEARS — **Win Azwir**
Julian Putong
Sunarjo
Kakar Suratman
Sutrisno

5 YEARS — **Djamhari**
Ilyas Harun
Harso Sunanto

February 1984

10 YEARS — **Chairil Anwar**
Daud Doallo
Caroline Hanafie
Johannes Kapa
Sjahran Sawala
Lolo Soetoro
Ingrid Sumajouw

5 YEARS — **Abdul Madjid**
Muhammad Noor

July 1984

10 YEARS — **Ardiansjah**
Niniek Asmaniati
Likkas Mappa
Altin T. Pratasik
Idris Salman
Rosdiana Simorangkir
Soedjarwoto
Soeyono
Sudijono
Sutadjiono
Anna Chandra Wiranto
Yachman

August 1984

15 YEARS — **Sarosa Endang**

10 YEARS — **Darwanto**
Sofyan Effendy
Firmanudin
Julianto
Henry Victor Kalesaran
Karimun
Sjarhrir Khalid
Kusnomo
Roben Mangopo
Wien Mochtar
Muhidin
Murhansjah M.S.
Sole Palimbongan
Wiyadi Setiawan
Hanny Sitompul
Soetrisno
Sugito
Pither Yacob LAA

5 YEARS	**Almunir Patonangi** **Sriwijaya S**

UNION OIL LIMITED—SINGAPORE

August 1984

10 YEARS	**Paul Lim Kim Khoo**

UNION OIL NORGE—NORWAY

January 1984

5 YEARS	**Kristine Haarr**

August 1984

5 YEARS	**Inger-Marie Roenneberg**

UNION OIL CO. OF THAILAND

February 1984

20 YEARS	**Paramaporn Krairiksh**
10 YEARS	**Udom Soonthornpanich**
5 YEARS	**Niyada Daojang**

July 1984

5 YEARS	**Robert D. Dook**

August 1984

15 YEARS	**Gary D. Lower** **Philip G. Kraemer, Jr.**
10 YEARS	**David D. Engle, Jr.**
5 YEARS	**Pairin Raggatanyoo** **Frederick W. Shepherd**

UNION OIL CO. OF CANADA LTD.

July 1984

15 YEARS	**Chiu Lin Ho,** Calgary, Alta. **John A. Shomody,** Fort St. John, B.C. **Joe F. Ferguson,** Calgary, Alta.
10 YEARS	**Lorna A. Barnes,** Calgary, Alta.
5 YEARS	**Gareth M.R. Beverley,** Calgary, Alta. **Arlene L.B. Juardo,** Calgary, Alta. **Frank W. Schneider,** Calgary, Alta.

UNION ENERGY MINING DIVISION

August 1984

15 YEARS	**John R. Ljung,** Parachute, Co.

MOLYCORP, INC.

July 1984

15 YEARS	**Pablo F. Archuleta,** Questa, N.M. **Richard Mandonado,** Questa, N.M. **Thomas P. Martinez,** Questa, N.M. **George Padilla,** Questa, N.M. **Leonardo Romero,** Questa, N.M. **Wilfred Trujillo,** Questa, N.M. **Ralph Vigil, Jr.,** Questa, N.M.
10 YEARS	**Gail M. Santistevan,** Questa, N.M. **Robert R. Schaller, Sr.,** Nipton, Ca.
5 YEARS	**Jack L. Bolejack,** Louviers, Co. **Herbert Gonzales,** Questa, N.M. **Johnny B. Gonzales,** Questa, N.M. **Robert Johnson,** Nipton, Ca. **Robert Lafore,** Questa, N.M. **David E. Martin,** Nipton, Ca. **Jose Martinez,** Questa, N.M. **Marty Martinez,** Questa, N.M. **Toby F. Martinez,** Questa, N.M. **Ernest Mondragon,** Questa, N.M. **Jake M. Montoya,** Questa, N.M. **Floyd I. Ortega,** Questa, N.M. **Roger D. Palmer,** Questa, N.M. **Donald N. Perkins,** Louviers, Co. **Arnold Quintana,** Questa, N.M. **Mario Rael,** Questa, N.M. **Gilbert L. Romero,** Questa, N.M. **Peter A. Smeal,** Louviers, Co.

August 1984

25 YEARS	**Conrad M. Garcia,** Questa, N.M.
20 YEARS	**James C. Brown,** Washington, Pa.
15 YEARS	**Phillip A. Abeyta,** Questa, N.M. **Frank S. Maes,** Questa, N.M. **Fred B. Sanchez,** Questa, N.M. **Tony E. Valdez,** Questa, N.M. **Michael A. Valerio,** Questa, N.M. **Robert J. Williams,** Questa, N.M.
10 YEARS	**Raymond Hawryluk,** Washington, Pa. **Meliton M. Quintana,** Questa, N.M. **Stephen L. Winton,** Nipton, Ca.
5 YEARS	**Herman S. Baca,** Questa, N.M. **Herbert M. Gesling,** Nipton, Ca. **John J. Hunter,** Nipton, Ca. **Clifton Matlock,** Nipton, Ca. **Jimmy S. Miera,** Questa, N.M. **Michael J. Morgas,** Questa, N.M. **Mark D. Santistevan,** Questa, N.M.

POCO GRAPHITE INC.

July 1984

10 YEARS	**John L. Coley,** Decatur, Tx. **Nancy S. Burk,** Decatur, Tx. **Bobbie J. Sweeney,** Decatur, Tx.

August 1984

15 YEARS	**Dexter E. Agee,** Decatur, Tx. **David H. Dodson,** Decatur, Tx. **Ezell Singleton,** Decatur, Tx.
5 YEARS	**Alena M. Bays,** Decatur, Tx. **Rosemary Chambers,** Decatur, Tx.

JOBBERS AND DISTRIBUTORS

July 1984

55 YEARS	**Ridge Spring Tire Company,** Ridge Spring, S.C.
35 YEARS	**Cedar Bluff Oil Company,** Cedar Bluff, Al.
30 YEARS	**Blair Oil Company, Inc.** Cornelia, Ga.
5 YEARS	**Richard James,** Enumclaw, Wa.

August 1984

45 YEARS	**Parker Oil Company, Inc.,** South Hill, Va.
30 YEARS	**Gnepper Oil Company,** Fremont, Oh.
15 YEARS	**Sahr Oil Co.** Estacada, Or.
10 YEARS	**Pittman Oil Company,** Durand, Wi.

RETIREMENTS

March 1984

John Troino, Union 76 Division, Gueydan, La., December 17, 1961

May 1984

Frances D. Bass, Union 76 Division, Gastonia, N.C., June 1, 1959
Roy O. Bryntesen, Corporate, Mt. Prospect, Il., January 24, 1944
Ted R. Wisener, Union 76 Division, Nederland, Tx., August 22, 1949

June 1984

Noble J. Allen, Corporate, Vista, Ca., May 1, 1960
Louise M. Appenzeller, Union 76 Division, Brush, Co., January 1, 1969
Philip Coats, Union 76 Division, Lombard Il., August 15, 1960
Leonard F. Contreras, Union Chemicals Division, Brea, Ca., June 4, 1953
Anna M. Cooley, Oil & Gas Division, Los Angeles, Ca., November 5, 1945
Hadyn E. Crofts, Oil & Gas Division, Coalinga, Ca., August 23, 1947
Gayle H. Cruthirds, Union 76 Division, Vidor, Tx., June 15, 1948
William E. Duggins, Union Chemicals Division, Palos Verdes, Ca., March 20, 1961
Godfrey Heidecker, Jr., Union 76 Division, Beaumont, Tx., April 15, 1948
Leighton Helm, Union Chemicals Division, Fullerton, Ca., August 24, 1959
Donald Marshall, Union 76 Division, Altadena, Ca., July 16, 1951
James R. Martin, Union Chemicals Division, Orange, Ca., October 15, 1957
Dorothy I. Peitz, Corporate, N. Hollywood, Ca., January 12, 1953
Charlotte H. Remick, Union Chemicals Division, Franklin, N.C., January 1, 1970
Marion F. Smith, Union 76 Division, Streamwood, Il., October 17, 1960
Arthur W. Woodall, Union 76 Division, Port Neches, Tx., July 29, 1948

July 1984

Claire B. Arnett, Union Chemicals Division, Hoffman Estates, Il., September 1, 1967
Charles E. Bragg, Union 76 Division, Lansing, Il., December 30, 1968

Charles G. Burk, Union 76 Division, Lakewood, Ca., July 11, 1944
Walter R. Fillippone, Science & Technology, Placentia, Ca., April 18, 1955
William M. Finn, Science & Technology, Placentia, Ca., April 15, 1957
Donald J. Hickman, Union 76 Division, Joliet, Il., June 10, 1941
Charles R. Keegan, Oil & Gas Division, Midland, Tx., January 3, 1951
Roger J. Kinsella, Science & Technology, La Habra, Ca., February 24, 1944
Esther I. Lee, Science & Technology, Brea Ca., February 7, 1968
Harold S. McCall, Union Chemicals Division, Brea, Ca., August 24, 1959
Douglas J. McCawley, Science & Technology, Fullerton, Ca., June 24, 1949
Robert Neiberger, Union 76 Division, Long Beach, Ca., August 7, 1944
Winford O. Plant, Oil & Gas Division, Del Mar, Ca., July 10, 1950
Norman W. Pohll, Union 76 Division, La Crescenta, Ca., May 1, 1951
Robert W. Putnam, Corporate, Santa Monica, Ca., February 2, 1954
Lorraine B. Rodrigues, Union Chemicals Division, Fremont, Ca., October 11, 1965
Robert A. Royce, Union Chemicals Division, Walnut Creek, Ca., July 6, 1948
Marion A. Schuhardt, Union 76 Division, Nederland, Tx., September 9, 1949
Joe O. Valdez, Molycorp, Taos, N.M., June 7, 1967

IN MEMORIAM

Employees

J. W. Harrison, Union 76 Division, Beaumont, Tx., April 27, 1984
Frank L. Landry, Union 76 Division, Long Beach, Ca., April 30, 1984

Retirees

Harvey H. Adkison, Oil & Gas Division, Tulsa, Ok., April 27, 1984
Elizabeth S. Bacon, Union 76 Division, Mt. Prospect, Il., March 31, 1984
Raymond W. Blakenship, Union 76 Division, Myrtle Beach, S.C., April 20, 1984
Ed Bollinger, Union 76 Division, Auburn, Ca., May 15, 1984
William E. Bollsinger, Union 76 Division, Mt. Prospect, Il., May 3, 1984
Edward C. Campbell, Union 76 Division, Clear Lake, Ca., April 29, 1984
Ann L. Chlysta, Union 76 Division, Chicago, Il., April 14, 1984
Patrick J. Collins, Union 76 Division, Paso Robles, Ca., May 7, 1984
Michael Cummins, Union 76 Division, Berkeley, Ca., April 28, 1984
Harold J. Davison, Union Chemicals Division, Carlsbad, Ca., May 3, 1984
Stanley Deal, Union 76 Division, Cypress, Ca., May 26, 1984
Elea Desormeaux, Oil & Gas Division, Vinton, La. May 17, 1984
Charles Z. Dick, Union 76 Division, Lynnwood, Wa., May 31, 1984
Frank A. Everett, Oil & Gas Division, Moorpark, Ca., May 19, 1984
Raymond G. Fenner, Union 76 Division, Columbus, Oh., May 16, 1984
Charles Fitzgerald, Union 76 Division, Concord, Ca., April 27, 1984
Raymond Galiher, Sr., Union 76 Division, Mesa, Az., May 9, 1984
Ronald D. Gibbs, Corporate, Pasadena, Ca., May 18, 1984
Ervin Golisch, Corporate, Hemet, Ca., May 20, 1984
Gertrude A. Helm, Union 76 Division, Fertile, Mn., March 29, 1984
Robert V. Herman, Union 76 Division, Saint Paul, Mn., May 30, 1984
Aziel W. Hollister, Corporate, Glendale, Ca., May 15, 1984
Hubert Jones, Union 76 Division, Dundas, Il., May 7, 1984
Gertrude L. Kellet, Corporate, Los Angeles, Ca., April 13, 1984
Anthony J. Kielma, Union 76 Division, Lemont, Il., May 21, 1984
Clarence C. Lutz, Oil & Gas Division, Oklahoma City, Ok., April 13, 1984
Robert I. McCullough, Union 76 Division, Columbus, Oh., May 16, 1984
Reynold R. Miller, Union 76 Division, Monterey Park, Ca., April 15, 1984
Clifford G. Mitchell, Union 76 Division, Belleville, Mi., April 30, 1984
Lester L. Monroe, Union 76 Division, Long Beach, Ca., May 26, 1984
Lawrence K. Morris, Oil & Gas Division, Del Mar, Ca., April 21, 1984
Merna Neuman, Union.76 Division, Seattle, Wa., May 28, 1984
Clarence W. Paulson, Oil & Gas Division, Taft, Ca., May 10, 1984
Roy F. Pillsbury, Union 76 Division, Wilmington, Ca., May 4, 1984
John J. Pirge, Molycorp, Tucson, Az., May 9, 1984
Wilmer E. Rich, Union 76 Division, Whittier, Ca., May 1,1984
William E. Sadler, Union 76 Division, Bakersfield, Ca., March 7, 1984
Marie Salden, Union 76 Division, Phoenix, Az., April 30, 1984
Harold A. Schehr, Union 76 Division, Lockport, Il., May 19, 1984
Joseph Soares, Oil & Gas Division, Santa Maria, Ca., May 21, 1984
Walter C. Sullivan, Union 76 Division, Newark, Oh., May 27, 1984
Barbara Ulmer, Union 76 Division, Indio, Ca., February 9, 1984
Joy S. Wheaton, Union 76 Division, Martinez, Ca., May 22, 1984
Ernest R. Wivel, Union 76 Division, Benicia, Ca., April 27, 1984

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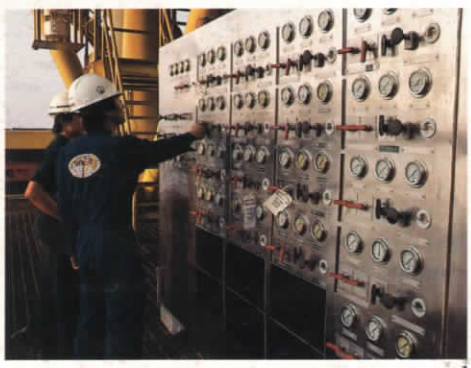

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COVER: Union has six drilling rigs at work offshore Thailand, tapping that country's first hydrocarbon resource to help reduce dependence on high-priced energy imports. **Story on page 1.**

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