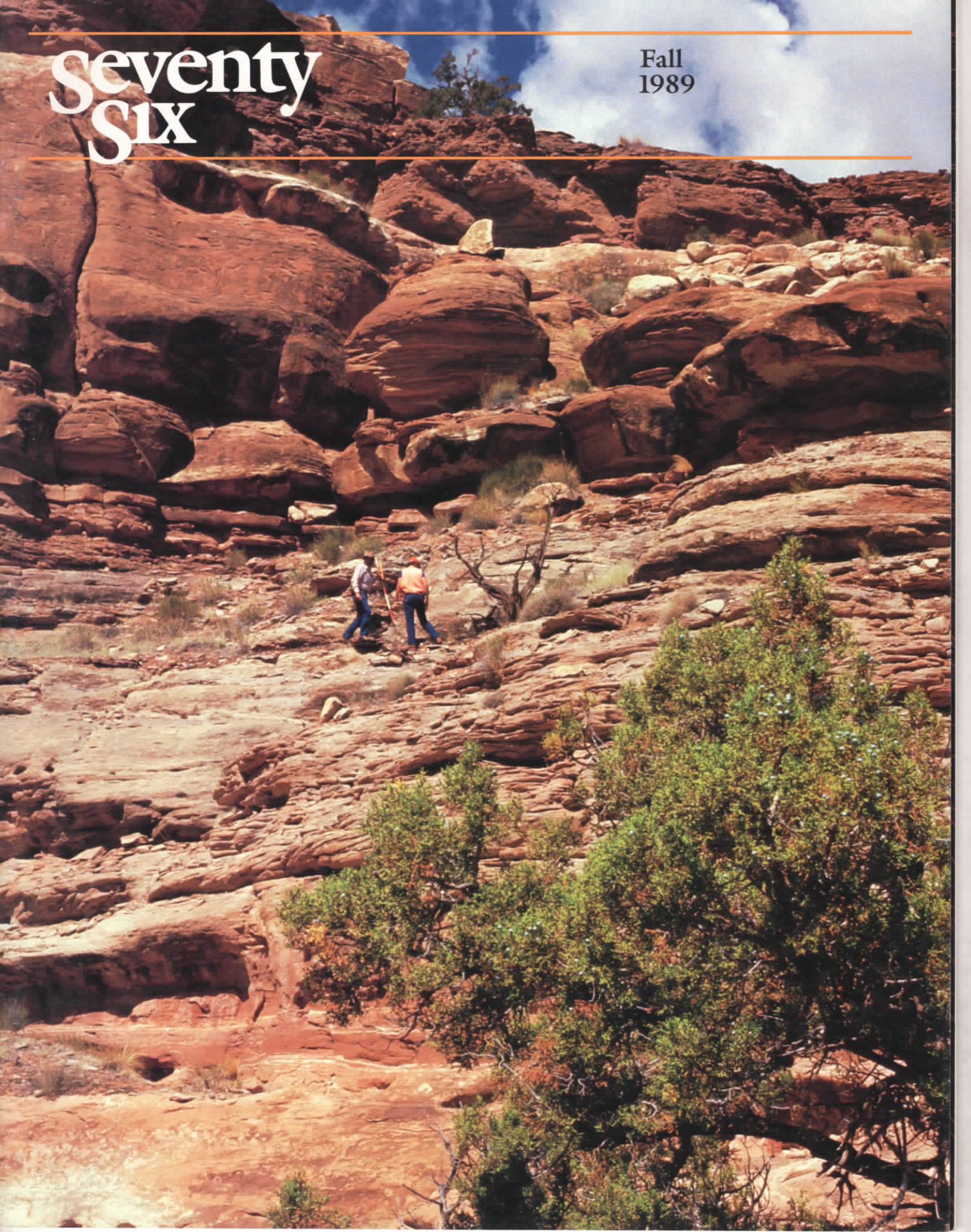

Seventy Six

Fall
1989







APPROACHING OUR SECOND CENTURY

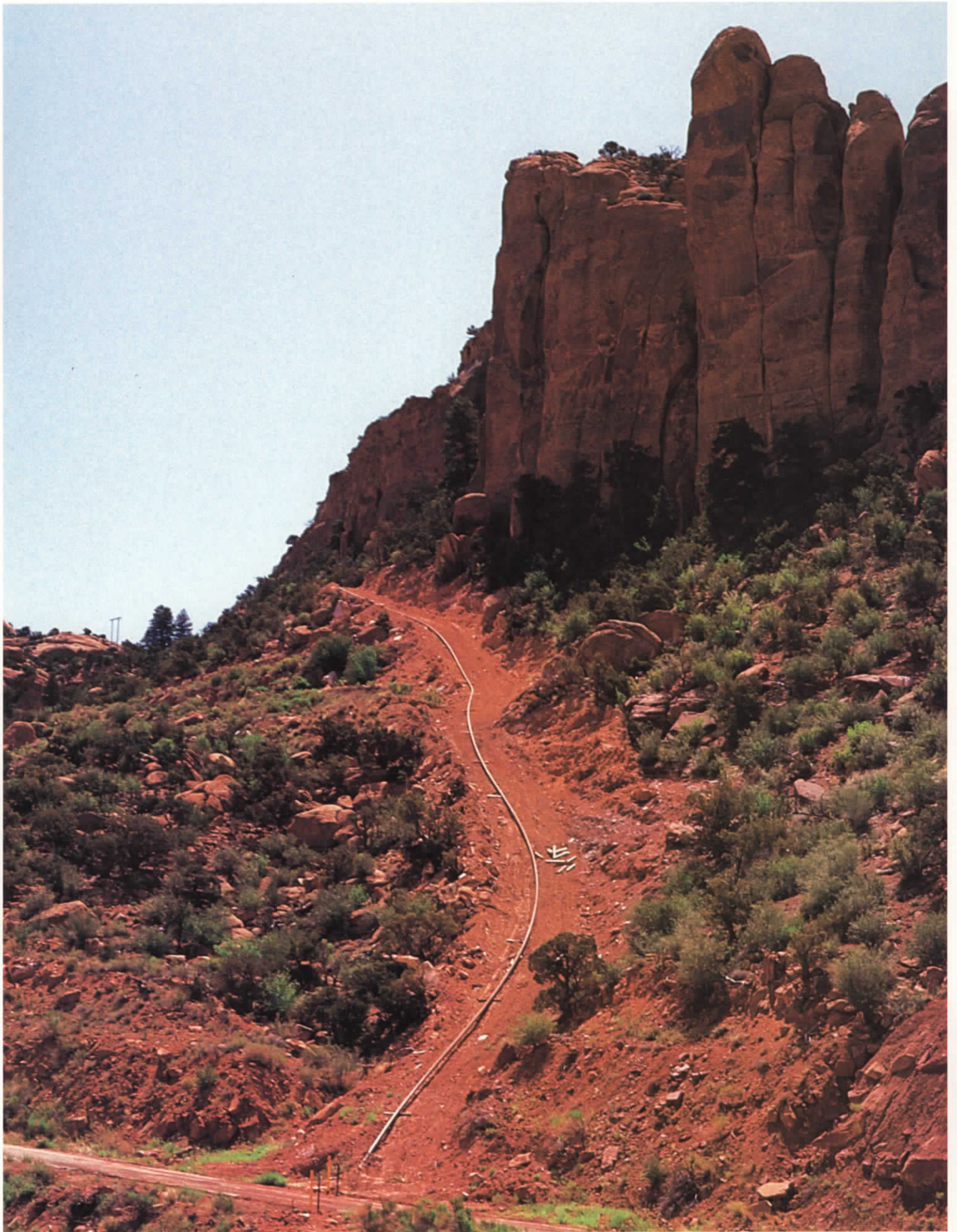
Dear Readers:

The year 1990 will be a significant one for Unocal, marking the company's 100th anniversary. To help celebrate our centennial, *Seventy Six* magazine will be published bi-monthly rather than quarterly in 1990. The magazine's format and content will also change during this special year.

Each of the first five issues of 1990 will focus on a different Unocal division. Each magazine will contain an overview of the division's development and growth, an illustrated historical timeline detailing significant events and milestones, an interview with the division president, and a section covering current happenings. There will also be a "quote-book" feature, in which selected employees and retirees will discuss what working for Unocal has meant to them. The sixth issue, focusing on the October centennial, will include coverage of activities in Santa Paula (Unocal's birthplace) and other company locations, as well as an interview with Chairman, President and Chief Executive Officer Richard J. Stegemeier.

We at *Seventy Six* are eagerly anticipating the upcoming centennial year. As always, your comments, suggestions and reactions are welcome.

Tim Smight
Editor



A NEW LEASE ON LIFE

Southeastern Utah is one of the most remote and least visited areas in the continental United States. The starkly beautiful high-desert region is dotted with broad mesas, deep canyons, visually arresting natural arches and isolated mountain ranges.

About 40 miles south of the town of Moab, an unassuming two-lane road intersects Highway 191, the main north-south route through the region. If you travel east along this road, you'll soon enter the Lisbon Valley area. A flat, arid plain filled with sage and scrub brush, the broad valley stretches for miles in all directions. It seems about as empty as land can be—until you notice something glinting in the sunshine up ahead. There, looking a bit like a George Lucas-inspired space outpost, sits a Unocal oil and gas processing plant.

It's an unlikely location, to say the least. But Unocal has been producing oil here for more than 27 years.

"This is definitely small-scale as oil and gas operations go," says area production superintendent Roger Dombrowski. "But we've been very successful here for a long time."

Left, an oil pipeline snakes through a canyon in Utah's remote Lisbon Valley. Unocal is about to begin a new endeavor here: the production and sale of helium. Right, a section of the gas processing plant.

More than 47 million barrels of oil have been produced at Lisbon since the field was first developed back in 1961. Production peaked at 11,000 barrels per day in the mid-'60s. Since then, the yield has steadily declined, dropping to just over 1,150 barrels per day by mid-1989.

"We're still profitable now as an oil producer, but we're approaching the point where the return won't justify the effort," Dombrowski says. "That's inevitable with any oil field, and that's usually when you prepare to pack up and move on."

But Unocal won't be packing up here any time soon. Thanks to advanced processing technology and a bold new marketing plan, the Lisbon Valley operation is about to get a new lease on life. A major plant expansion is in the works that will move Unocal into a new endeavor: the production and sale of helium.

"When you mention helium, most people think of party balloons and blimps," says Dombrowski. "That's about all it was used for in the past. But today, helium has a growing number of high-tech applications. It's a very rare, strategic element—and Unocal has one of the largest deposits in the world, right here in the Lisbon Valley."

The Lisbon Valley story began back in 1959, when the field was discovered by Pure Oil Company, later to merge with Unocal. Part of a larger geologic area known as the Paradox Basin, the region had been explored by oil hunters for several years. When seismic studies conducted by Pure geologists just south of the La Sal mountains looked promising, the company sunk a wildcat well in the highly faulted area. The well came in at 730 barrels of oil per day, leading to development of the Lisbon field.

Operated by Unocal, which has a 52-percent interest, the Lisbon unit remains the only major oil and gas project in the Lisbon Valley. The oil deposit is located roughly 8,000 feet below the surface, in a formation known as the Mississippian. Recovering the oil—which has a high water content and is associated with an extensive "cap" of sour, high-sulfur gas—has been an ongoing challenge.

To help sustain reservoir pressure and improve oil production, gas injection was initiated in 1962. Of the 34 wells that have been drilled in the field, 15 are currently producing and five are used to reinject produced gas back into the formation. The gas cycling technique has been highly successful, despite the difficulties posed by the area's remoteness and rugged terrain.

"This is not the easiest country to operate in," says field and plant foreman Jay Axtell, a Lisbon unit veteran who has worked here from the very beginning. "Put it this way—out here, you know you're not in East Texas."

A tour of the field, located just east of the processing plant, will confirm that. Although the plant itself sits on level ground, the wells are in an area of rugged, red hills that are cut by narrow, twisting canyons. Each well must have its own adjacent unit to separate oil, gas and water for measurement; these are then recombined and sent to the processing plant by pipeline. The lines snake through the canyons, climb over hills and bend around huge boulders.



The tricky terrain can lead to some adroit maneuvering on the part of field personnel—in more ways than one. “When we were drilling a few years back, one of our guys was sent out to flag a well site specified by the geologists,” Axtell recalls. “The location turned out to be directly on top of a sharp pinnacle situated above a deep chasm. We convinced them to change to an alternate site.”

Lisbon’s current yield of 1,150 barrels of oil per day is augmented by the production of natural gas liquids (NGLs). Roughly 400 barrels a day of natural gasoline, 18,000 gallons of propane and 12,000 gallons of butane are produced. The propane and butane are sold in liquid form, and shipped out by truck. Natural gasoline is mixed into the crude oil stream, which leaves the plant by pipeline.

The NGLs are associated with about 60 million cubic feet per day of sour inlet gas. It is this gas, currently reinjected into the reservoir, that holds the key to the Lisbon unit’s future.

“In most oil fields that have substantial volumes of associated gas, the normal scenario when oil production becomes uneconomic is to begin producing the gas for sale,” explains Dave Peters, Lisbon unit project manager. This phase in a field’s life, referred to as “blowdown,” can last for just a short time or for several years, depending on the resource and the economics.

“Here, we have a large volume of associated gas, so blowdown was considered from the beginning as a major phase of the development,” Peters says. “As the time drew nearer, we began to study the alternatives more closely.”

In conjunction with scientists at the Science & Technology Division (chief among them reservoir engineer Ron May), Lisbon unit production engineer Paul Lokke began studying the field’s reservoir characteristics.

“S&T put together a sophisticated computer model of the reservoir,” Lokke explains. “This allowed us to compare alternative blowdown schemes from engineering, processing and economics points of view. All of the studies indicated the optimum time to begin blowdown was at hand.”

The unique nature of the Lisbon gas deposit opened up several possibilities for pursuing the blowdown phase. In addition to marketable products such as ethane and natural gas, the resource has a relatively high percentage of inert (inactive) gases—mostly nitrogen and carbon dioxide—that are not marketable. The inlet gas also has a high sulfur content, which will require application of a sulfur-removal technology. But this will yield a marketable product in the form of elemental sulfur.

More intriguing to those developing the blowdown scenarios was the reservoir’s high helium content—about .8 percent, more than double the amount usually found in gas deposits.

The unusually high volume of helium in the Lisbon resource warranted giving it a closer look as a potential marketable product. So as part of the blowdown planning project, Peters and his team had a helium marketing study done last year. What they learned was both surprising and encouraging.

“Demand for both liquid and gaseous helium has undergone amazing growth in recent years,” says Peters. “Worldwide demand was under 1 billion cubic feet per year in 1977. By 1987, it was 2.2 billion cubic feet per year—and demand is continuing to grow at about a 10-percent annual rate.”

Helium is the only known substance that does not become a solid at temperatures approaching absolute zero—the temperature at which all molecular motion ceases. It is also inert and extremely light. These properties give helium valuable applications in a host of industrial, medical, electronic and other fields—particularly in the area of cooling systems. CAT scanners, magnetic resonance imagers, high-energy linear accelerators and supercomputers are just a few of the devices that use helium for cooling.

Since it remains in gaseous form down to -452 degrees Fahrenheit, helium also finds applications in cold environments as a gas. Gaseous helium is used to pressurize fuel tanks in the space shuttle, for example. It is also employed as a cooling gas in some types of nuclear reactors because it will not pick up or transmit radioactivity.

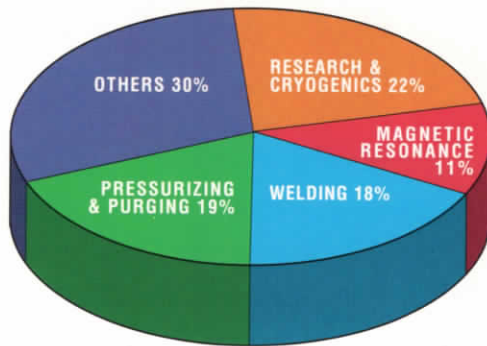
Other uses are widely varied. Helium is employed for leak detection in pipeline systems, to purge various types of storage tanks, and in commercial diving. Mixed with oxygen in diving tanks, helium gas enables divers to work in deeper water and stay down longer without the danger of nitrogen poisoning.



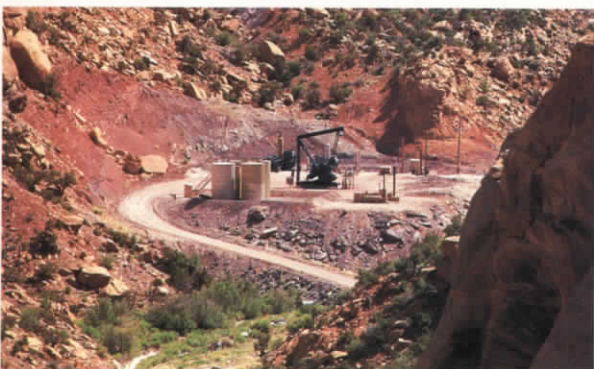
Left, a worker loads a magnetic resonance imaging machine with liquid helium. The superconducting magnets used in these advanced medical diagnostic devices are cooled by the product.



HELIUM APPLICATIONS



Clockwise from above: Project manager Dave Peters (right) and plant and field foreman Jay Axtell tour the plant grounds; one of the Lisbon field's wells; Peters and Axtell pause above a pair of liquid propane storage tanks.





Meteorologists and other scientists use helium in research balloons, and the gas is also used in the logging industry to move timber by balloon. Novelty balloons are a well-known market, of course—but they only take up one percent of the world's growing demand for helium.

Helium-bearing natural gas reservoirs are the source of all present-day production. But very few contain helium in commercial quantities.

"Typically, natural gas reservoirs contain less than .3 percent helium, which is uneconomic for recovery," Lokke says. "Most of the world's helium is produced from a handful of gas fields in the Oklahoma/Texas panhandle, which are .5 to .6 percent. The Lisbon field has .8 percent helium, so that gives us a substantial resource. An added plus is that the higher the helium concentration, the less expensive it is to recover."

Converting the Lisbon operation to gas production—including the separation and production of helium—will require a major revamping and expansion of the plant. The existing facilities were designed to produce crude oil and natural gas liquids, with sour natural gas being reinjected into the Mississippian formation.

"Reinjection began back in 1962, when the initial compressor plant was built," says Axtell. "The NGL plant was added in 1965. Since then, not many changes have been made—so this is really going to be a major league project for us."

Looking at the Lisbon facility today, it's hard to believe that it has been humming along for more than a quarter century. Kept scrubbed and painted bright white and silver, the tanks and processing units sparkle like new.

"We emphasize preventive maintenance here, and a little of that goes a long way," says senior plant mechanic Bob Atkinson, who has worked at the Lisbon plant since its original construction. He takes pride in the facility's long record of safe, successful operation—and he isn't a bit apprehensive about the changes lying ahead.

"To me, the expansion project is very exciting," he says. "There will be a lot of new things to learn, and I'm looking forward to the challenge."

The biggest phase of the project, slated to get under way in early 1990, will be the construction of a brand-new processing facility designed to handle 60 million cubic feet of gas per day. A helium purification and liquefaction plant will also be built, with completion targeted for the summer of 1991.

The produced gas must undergo several processing steps to meet sales specifications, including the removal of nitrogen, carbon dioxide and sulfur. "To get the nitrogen out, we have to chill the gas to -300 degrees Fahrenheit," Peters says. "It's only a small step to chill it further, to -452 degrees, in order to recover the helium in liquid form."

Permitting for the project has been very involved, requiring detailed engineering, design, and environmental studies. Unocal's Environmental Sciences group has helped with the permitting, which included an environmental assessment of the project for the federal Bureau of Land Management.

"Everyone involved has been in motion for over a year, and we haven't hammered one nail yet," Peters jokes. "But projects like this take a lot of preliminary study. We want to do this the best way, the safest way, and the most efficient way possible."

When the new plant is up and running, the Lisbon operation will be producing and selling natural gas, helium, sulfur and ethane, in addition to the NGLs currently sold. Oil will also continue to be produced, but at a lower rate. Natural gas, which will be shipped out by tying in to two existing pipelines, is expected to account for roughly 40 percent of the unit's net profits. Helium and ethane will account for about 20 percent each.

"The helium will be liquefied and shipped out by truck," Peters says. "We'll only need to load two or three trucks a week, because they can hold up to 11,000 gallons. That's about a million cubic feet of equivalent gas—so one truckload could inflate a heck of a lot of balloons."

Once the blowdown phase is under way, the Lisbon plant will be a dependable source of natural gas and NGLs for several years to come. More significantly, Unocal will have the distinction of becoming one of the largest helium producers in the world.

Is that thought at all daunting to the team based in out-of-the-way southeast Utah?

"Not at all," says Dave Peters. "Demand for helium continues to expand, and the potential is enormous. It's a new business opportunity for Unocal. We're very excited about it." T.S. ☉

Editor's note: Since this article was written, both Roger Dombrowski and Dave Peters have moved on to new assignments within the Oil & Gas Division.

Dombrowski, now based in Midland, Texas, is regional production coordinator for the Southwestern Region. He has been replaced by Craig Van Horn, formerly a petroleum engineer in Midland.

Peters has moved to Andrews, Texas, where he is now field production superintendent. His replacement is Russ Hanscom, formerly area production superintendent in Coalinga, California.



Facing page, liquid propane gas fractionization towers at the Lisbon plant. Left, the space shuttle lifts off from Cape Canaveral. The shuttle's fuel tanks are pressurized with gaseous helium, one of the new products the plant will soon produce.



ON THE ROCKS

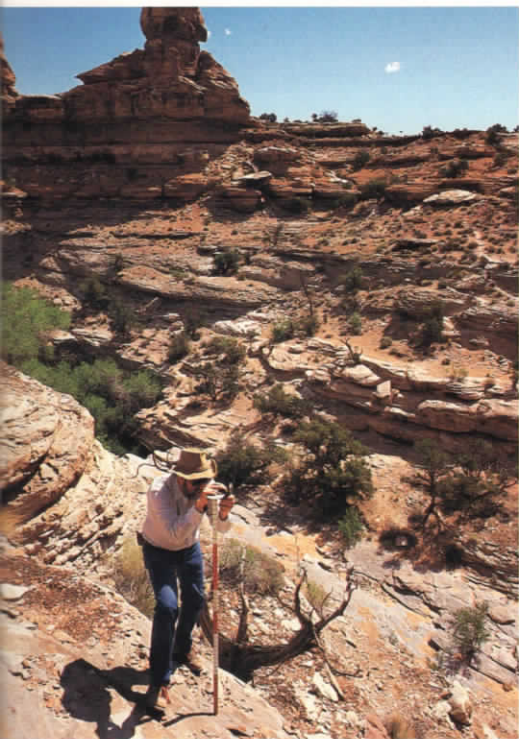
Lit up by bright morning sunshine, the narrow, twisting canyon below us appears otherworldly. The steep rock walls, ranging in hue from light tan to burnt orange, drop down more than 200 feet from the canyon's rim. Deeply etched by eons of weathering, the walls are dotted with massive pillars and spires that look like bizarre creatures from a dream.

Huge boulders are strewn over the canyon floor, evidence of the wrenching upheaval of ages past. If not for the scattered green patches of cactus and scrub brush, and the blue sky and billowy white clouds overhead, a visitor could easily believe he had journeyed to Mars.

But this is indeed planet earth. We're standing at the rim of Big Spring Canyon, located in remote southeastern Utah. It is here, and in similar places the world over, that the search for oil and gas takes explorationists.

On this morning, Unocal geologists George Moore and Rex Cole are about to begin two days of intensive field work. They have come to Big Spring Canyon to study the rocks. Clad in blue jeans and hiking boots, with packs slung over their shoulders, the pair look more like climbers than scientists.



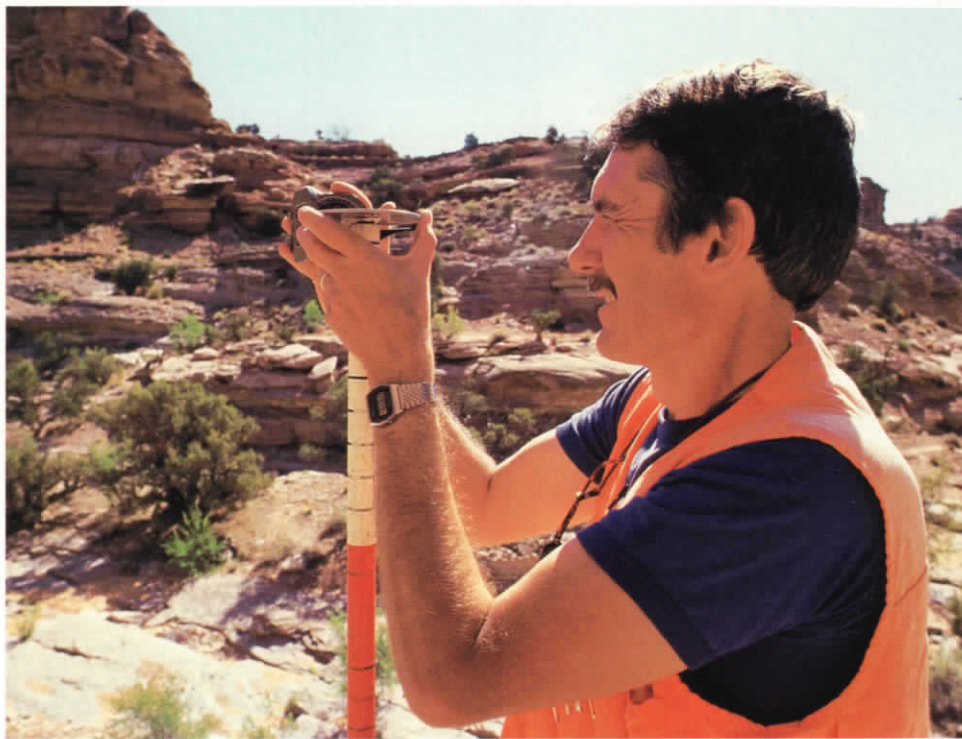


Only the gear they carry—logbooks, a surveying compass, a box-like electronic instrument and a red-and-white striped staff, among other items—reveals that this is more than a recreational excursion.

“We enjoy getting out in the field, as all geologists do,” says Cole. “But we’re here to work.”

With that, the two begin their descent to the canyon floor, where the day’s work will commence. It’s only 8:30 a.m., but the heat is already beginning to build, radiating out from the red walls. There are no other people in sight.

Big Spring Canyon sits on the western edge of a geologic region known as the Paradox Basin. A basin is simply a natural depression in the landscape, or an area that has subsided (dropped down) due to tectonic activity of the earth’s crust. Over time, sediments borne by air or water are deposited in such basins. If conditions are right, some of these sediments can be transformed into hydrocarbons and contained in traps deep underground. Oil hunters concentrate on basins that have long depositional histories—and the Paradox Basin is one such region.



Spread out over roughly 20,000 square miles of high desert plateau in the “four corners” area of the southwestern U.S., the basin encompasses parts of Utah, Colorado, Arizona and New Mexico. It’s a varied landscape of sage plains, canyons, broad mesas and isolated mountain ranges.

Field studies and seismic surveys have been conducted here for many years. Existing oil and gas development in the basin, such as Unocal’s operation in the Lisbon Valley (see accompanying story), date back to the 1960s. But the Lisbon Valley production, as well as other production to the south, is from large reservoirs that were relatively easy to find. There may be additional hydrocarbon deposits in deeper formations that are not as easily detectable. By studying the rock outcrops in Big Spring Canyon, Moore and Cole hope to find clues that will aid in the search for these “hidden” reservoirs.

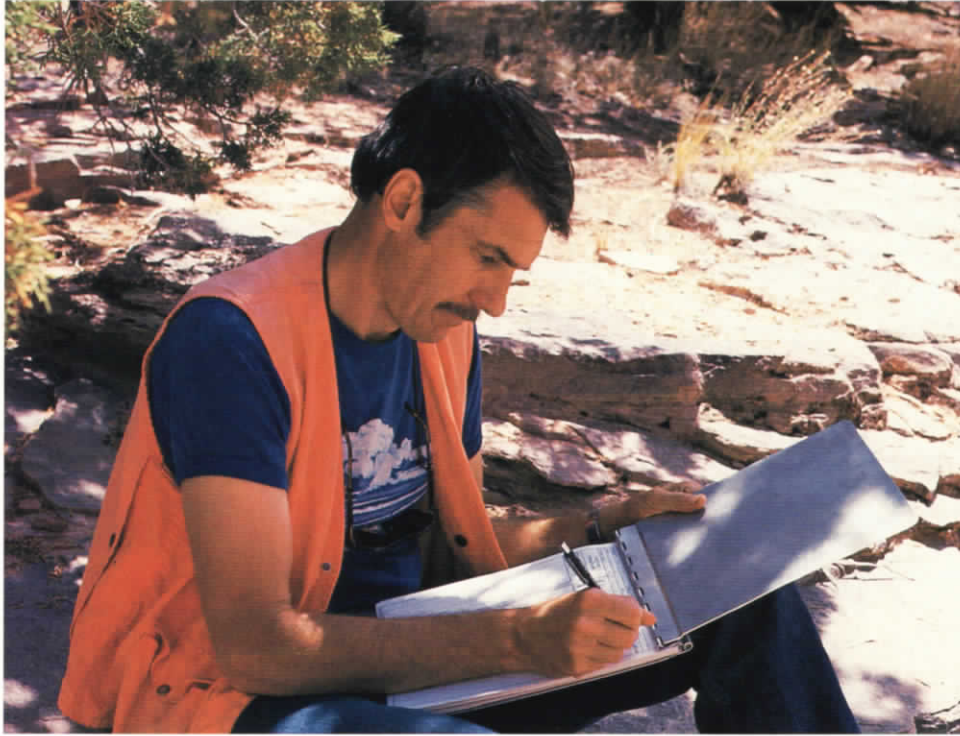
“The same rock formations exposed here lie deep underground in the basin’s interior,” explains Moore, a regional stratigrapher based at the company’s Midland, Texas office. “We hope to correlate what we find here, in surface outcrops, with what we’ve learned from well cores and seismic surveys done in the interior.”

Such correlations, Moore continues, enable geologists and geophysicists to better understand the basin’s depositional history. “This can help us determine if there’s any potential for oil down there, and where that potential may lie.”

The history of an area like Paradox Basin is far from straightforward, however. Faulting and other tectonic activity have jumbled things up considerably. The climate and environment have changed repeatedly over the ages as well. During some periods, the entire basin area was underwater; during others, a desert sand-dune environment prevailed.

“A basin isn’t like a dishpan that simply fills up evenly with sediments,” Moore says. “It’s an ever-changing environment, and the challenge is to reconstruct its history, piece by piece. Seismic surveys, rock cuttings and well cores can only reveal so much. That’s why we have to get out in the field to look at outcrops.”

Above, left to right: An outcropping on the edge of the Paradox Basin exposes layers of sedimentary deposition; geologists George Moore (center) and Rex Cole measure a rock section in Utah’s Big Spring Canyon.



In 20 minutes, Moore and Cole have completed their descent along a narrow trail. Viewed from the canyon floor, the rock walls seem even more imposing. It feels more like earth from here, but the atmosphere is primordial. A lizard scurries by, scattering pebbles as it darts under a boulder, adding to the effect.

The two geologists take off their packs and scan the opposite wall, where most of today's work will take place. It looks much steeper than the one we've just descended, and there's no trail. Moore and Cole will climb it twice before the day is done.

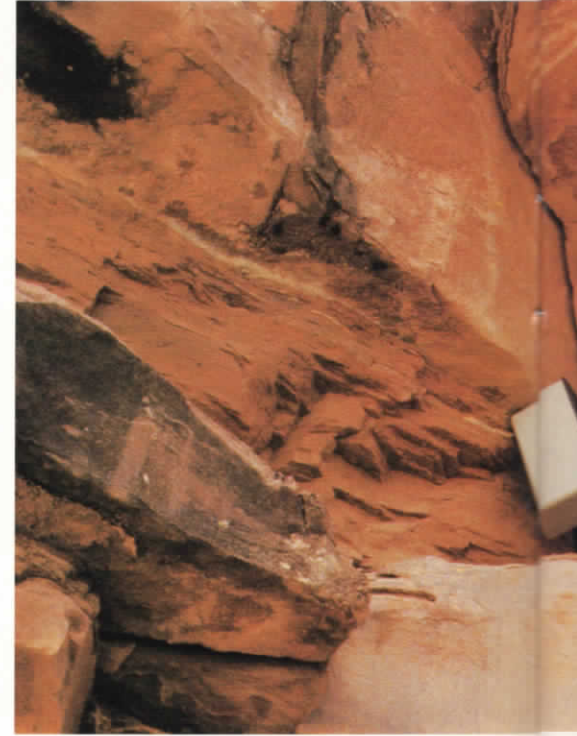
There are three major tasks the team wants to accomplish today. The first is to carefully measure the thickness of each sedimentary layer of the outcrop. Second, they will write a detailed description of the exposure, accompanied by sketches to visually record the texture and weathering characteristics of each layer. Finally, they will measure the natural gamma radiation of the outcrop, at one-foot intervals, for comparison with well logs done in the basin's subsurface.

Normally, the team would also take rock samples for lab study. But since Big Spring Canyon lies within the boundaries of a national park (Utah's Canyonlands National Park), this is not allowed. The previous afternoon, Moore and Cole had met with Park Service rangers to discuss their field study and obtain permission for the excursion.

"Geologists work in state and national parks all the time," says Moore. "Not being able to take samples isn't an insurmountable problem. It just means we have to be extra thorough in our written descriptions."

Why not choose a spot outside the park for the field study? "This canyon happens to have the specific exposures we want to study," says Cole, a senior research geologist with Unocal's Science & Technology Division. "It's also accessible. You have to be able to get on the rocks in order to do field work. Otherwise, you may as well be looking at photos in a book."

By 9 o'clock, the two geologists are ready to begin the first phase of their work. They will measure the outcrop from the bottom up, covering about 120 feet of the rock wall. Above that, the outcrop is too sheer to climb—although the section they do plan to measure looks steep enough to give a mountain goat pause.

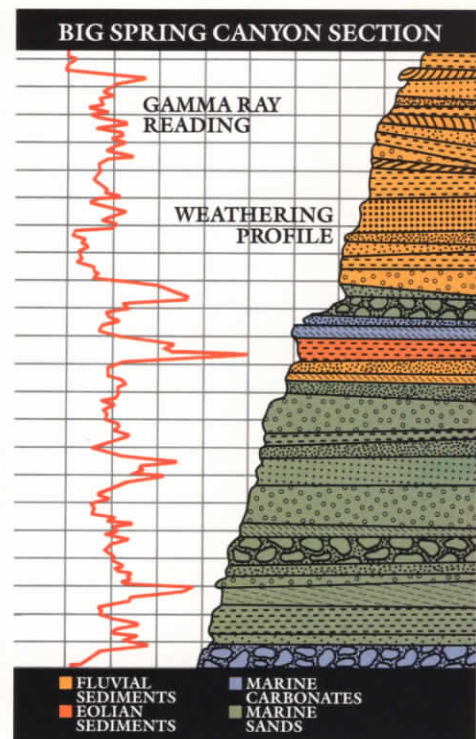
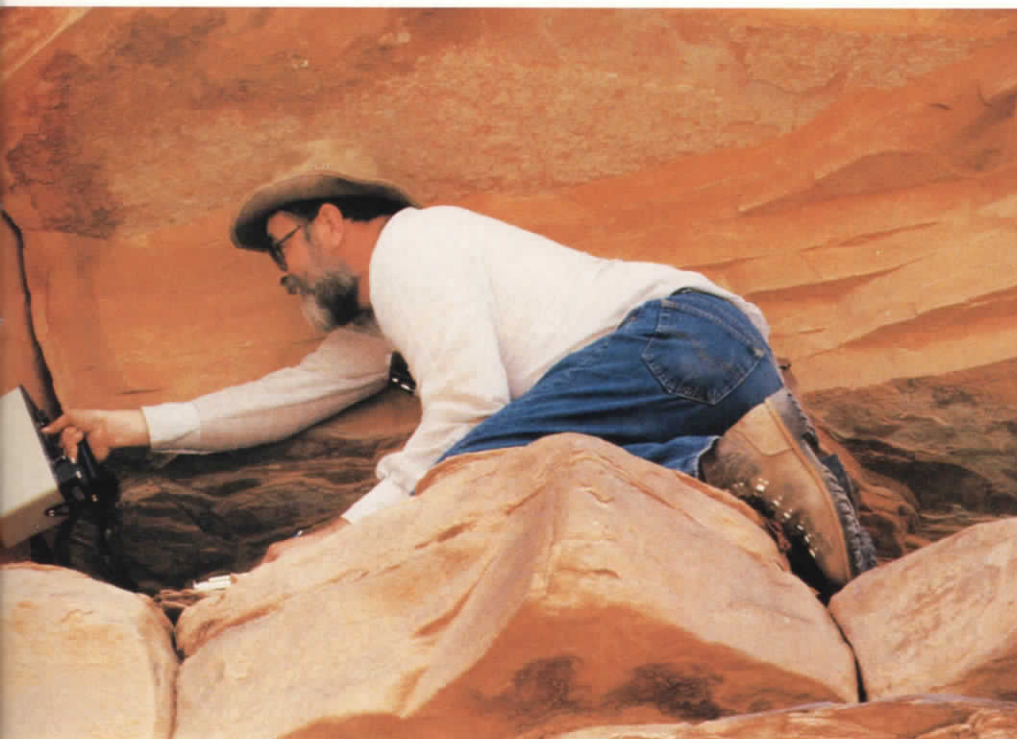


The measuring itself is done with a tool called a Jacob's staff, a metal rod five feet in length. The staff is divided into foot-long sections that alternate red and white. ("A geologist's barber pole," Moore jokingly calls it.) Because the rock face is not truly vertical—and the layers aren't truly horizontal—a compass and level are used when needed to correct for dips and bends.

"We want to measure the sedimentary thickness of each section, which isn't necessarily the same as the vertical thickness," Moore explains. "We also need to be as precise as possible. One hundred feet of exposed rock equals only a few inches on a well log."

Starting at the foot of the rock wall, the two geologists begin taking measurements. While one holds the staff, the other records the thickness of the section, positioning the staff handler by using the compass and level when necessary. The different sedimentary layers are easily discernable, varying in color, texture and thickness like layers in a cake.

Above left, Cole makes notations in his log book. Middle, Moore takes a gamma ray reading. The information gathered must be precise for accurate correlations.



Sedimentary rocks are formed when various sediments—anything from older rock fragments to different types of organic material—are transported by wind or water to the area of deposition. Over the ages, as deposits are laid down in succession, they are compacted into rock layers. Beneath the sedimentary layers lies what's known as "basement rock." This is very dense, hard rock, such as granite or quartzite, which is about two billion years old and usually lies thousands of feet below the surface.

There are several different types of sedimentary rocks. Clastic rock is composed of weathered rock debris and minerals that originated outside the basin. Carbonate rock is formed from the compacted remains of marine organisms such as calcareous algae, or the shells of dead marine animals. (Sandstone is one type of clastic rock; limestone and dolomite are common carbonates.) A third type of sedimentary rock is shale—a compact, highly impermeable rock composed of silt and clay.

All three of these rock types are of interest to the oil hunter. Because they may be porous and permeable, clastics and carbonates make excellent petroleum reservoir rock. Shale, on the other hand, does not. But shale is often the "cap rock" that traps oil deposits in reservoirs.

In the Paradox Basin, layers of rock salt and other evaporite minerals such as gypsum are another important rock type. These provide an excellent seal or cap rock for hydrocarbon traps, but complicate the geology because they can flow when subjected to intense heat and pressure. Rocks containing salt are also poorly exposed on the surface because they dissolve rapidly when contacted by water.

The first segment that Moore and Cole measure, which extends up from the canyon floor for just a few feet, is a layer of limestone. "If you look closely, you can see brachiopods (fossilized sea shells) embedded in the rock," Moore points out. "That means the area had a marine environment when this layer was deposited."

The idea of this arid region covered with water is difficult to envision. But the next highest section changes the picture entirely. "Here we've got sandstone, indicating an arid land environment," Moore says. "Then above that, limestone again. So during this time period, there was alternating marine and eolian (windblown) deposition."

Above right, a weathering profile of the Big Spring Canyon outcrop is plotted beside the corresponding gamma ray readings. Correlating the data with well logs helps geologists better understand the basin's depositional history.

Further up the outcrop, a third type of sedimentation becomes evident—fluvial, or lake-and-stream deposition. Although the changes seem rather abrupt visually, they occurred over thousands of years, Moore explains. "Over time, a lot of things are happening to the rock. The climate will change, the water table will rise and fall, the sea level will vary. All of these factors affect the deposition rate, the thicknesses of rock layers and their porosities."

Just over halfway up the outcrop, the pair reaches an impasse. There appears to be no way to continue climbing. Cole frowns and wanders off, traversing the rock face laterally. Five minutes later and fifty yards away, he stops and signals; he's found a route up. Moore scopes the rock face behind Cole with the surveying instrument, and a new spot is flagged that corresponds with the last measurement. Then Moore hikes over to join his companion, and the ascent continues.

"Sometimes we have to zigzag all over the place to keep climbing," Moore says.



After two hours, the pair has measured 70 feet of rock face. The climb is getting more difficult now. At one point, Moore tries to squeeze through a narrow opening between a huge boulder and the rock face. He is not successful. "Now you know where the phrase 'stuck between a rock and a hard place' came from," he says.

At the 100-foot level, the two geologists pause on a ledge to rest and take in the view. A new portion of the canyon wall is now visible, and in one spot a huge slab of rock appears to have been sheared off. Its shattered remnants lie scattered on the canyon floor like oversized pebbles. Higher up, the odd-shaped spires that surround us continually change in appearance as the sunlight and shadows play upon them.

"The power of nature is really something to behold," Cole says. "Seeing it up close is one of the best things about geologic field work."

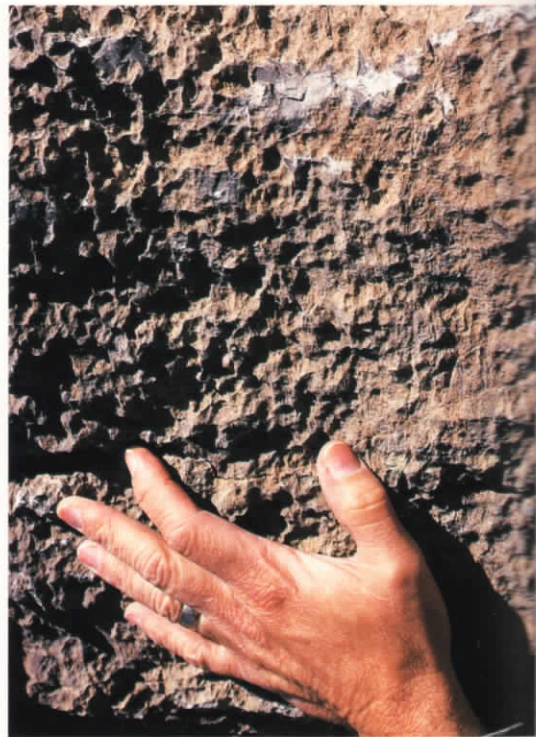
Like most geologists, Moore and Cole only spend a few weeks each year in the field. "Technology keeps most geologists office bound these days," says Moore. "Much of our time is spent analyzing logs, cores, abstracts and seismic data. We also do a lot of work with computer models of the subsurface. But technology doesn't eliminate the need for field work. To understand the big picture, you still have to get out and look at the rocks."

After another 30 minutes of climbing, the team has completed its measurement of the 120-foot rock section. Moore estimates that the sedimentary layers charted represent half a million years of deposition.

The descent to the canyon floor, although tricky in places, takes only 20 minutes. After devouring sack lunches, Moore and Cole are ready for their second climb. This time, they will split up to perform separate tasks.

Using a battery-powered electronic device called a scintillometer, Moore will record gamma ray readings of the outcrop at one-foot intervals. Cole will sketch a weathering profile of the rock face in his log book, accompanying the artwork with a detailed written description of each sedimentary layer.

Moore heads for the outcrop first, scintillometer in hand. The device gives a digital readout, showing how much natural gamma radiation is being emitted by the rock. "Limestone has the lowest readings, and shale the highest," he says. "We can use the data to distinguish between rock types, which is particularly helpful in the transition areas between sedimentary layers."



Back in the office, Moore will compare the readings with gamma ray logs from wells in the basin's subsurface.

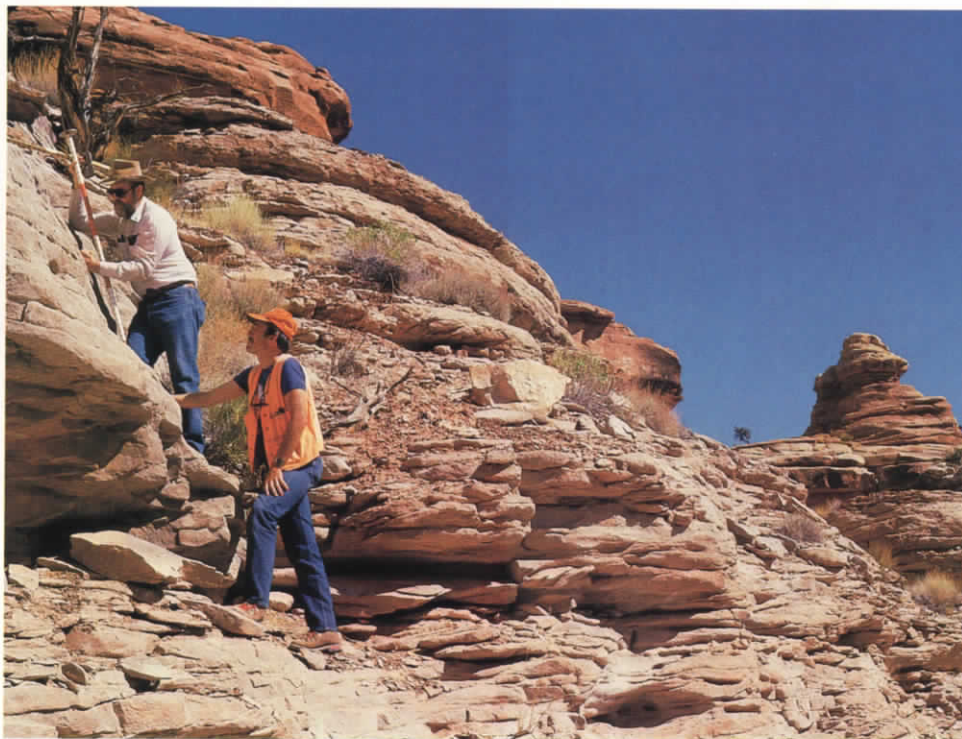
"The more nearly the readings match in vertical sequence, the more likely it is that the underground formations between here and the well sites also match," he explains.

Getting the outcrop readings is no easy task, however. The scintillometer must be positioned just inches from the rock face. Moore has to contort his body to reach some spots, while struggling to maintain his balance. It is painstaking work, and the afternoon heat doesn't boost the comfort level any. Neither do the gnats which swarm around his face.

"Discomfort is just part of field work," he says. "You learn to ignore it." At times that can be difficult, however. During one field trip, Moore sat down on a cactus. Another time, he nearly stepped on a rattlesnake.

"I tend to get pretty involved in what I'm doing," he says, smiling.

"Exploration is always a risky undertaking," says Cole. "Our job is to help reduce that risk by providing the best geological data we can."



Thirty feet below on the canyon floor, Cole is concentrating on his own task. He spends several minutes at the foot of the outcrop, gazing at the rock face and sketching an overview of the measured section. Then he moves in close to begin a layer-by-layer description. Peering intently at the rock, sometimes through a hand lens, he slowly climbs the outcrop, pausing frequently to scribble in his logbook. Among the things he notes are the type of rock, its color and texture, the grain size, the presence of fossils, and the bedding characteristics.

"All of these things provide clues about the depositional setting for the sediments," he explains. "Certain types of fossils are often present in hydrocarbon source rock, for example, while others can dissolve out and leave pore space for oil deposits."

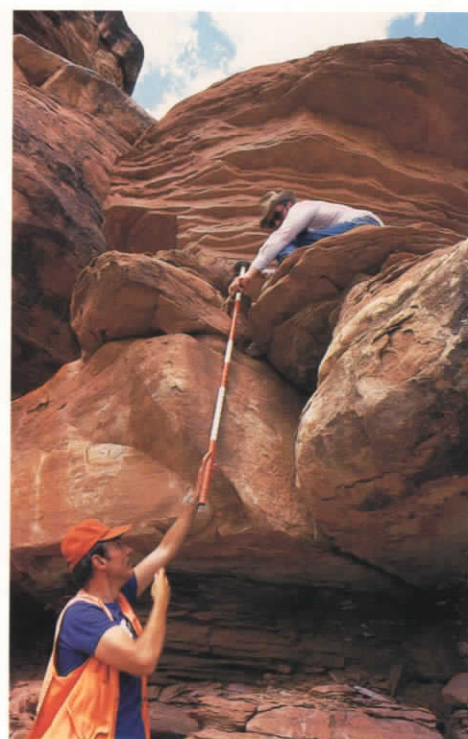
Grain size and bedding characteristics can reveal how the sediments were laid down, Cole notes. A fine-grained sandstone with very uniform grain size usually signifies windblown deposition. Ripple marks or crossbedding can indicate the direction of the wind or water currents. "These kinds of factors can affect the rock's permeability," Cole says. "Fluids may move through the rock more readily in certain directions, and knowledge of this can help in constructing reservoir engineering models."

The hitch is that what's evident on the outcrops can't always be traced to the subsurface. Some layers may have been jumbled by tectonic activity, while others that are present in the subsurface may have entirely eroded away on the outcrop.

"In the middle of the basin, all of this is thousands of feet underground," Cole says. "But everything we learn here can help us solve the puzzle."

The puzzle for an oil hunter, of course, consists of several critical questions. Is there source rock present—organic-rich sediments, usually of marine origin—and has it matured enough to generate hydrocarbons? Is there reservoir rock—sandstones or carbonates—that is porous enough to hold the oil and permeable enough to transmit it? Is there a trap—a dome or fault or impermeable cap—that prevents the oil's migration? Is the oil technologically and economically recoverable? And finally, is there enough oil to warrant development?

The ultimate answers, of course, are never known until actual drilling takes place. But the work of the field geologist can help shed light on the questions. "Exploration is always a risky undertaking," Cole says. "Our job is not to come up with the perfect prospect, but to help reduce that risk by providing the best geological data we can."



It's after 6 p.m. when Moore and Cole finally come down off the outcrop. They are tired, sore, dusty and thirsty, "like good field geologists should be," says Cole. Both are pleased with the day's work.

"The section is a lot more complex than we'd thought," Moore says. "There is more interfingering of marine and eolian deposition than I had anticipated. But that should make it easier to trace what we've found to the basin's interior."

The following day, Cole and Moore will return to Big Spring Canyon to study a different outcrop. Then there will be extensive follow-up work in the office, correlating what they've learned with data from well logs and previous field work in the basin.

On the way back to their motel—60 miles away in the tiny town of Monticello—the two geologists map out the next day's excursion. Halfway to town, their attention is drawn to a bright red butte sitting about 500 yards off the highway. Cole pulls the car over, and they scrutinize it.

"Looks like an interesting formation over there," Moore says, glancing at Cole. Sunset is still a couple of hours off on this summer day. Cole kills the engine and smiles.

"Let's go," he says.

They exit the car and head for the rocks. *T.S.* 70



Left, the massive flywheel of the venerable Jeansville steam pump, now on exhibit in Paso Robles, California. Right, a modern-day crew replaces a Unocal pipeline in the city of San Luis Obispo.

Preserving An Old-Timer

“We’re the old timers now,” muses veteran Unocal utilityman Tom Hail. “We feel the same way steam locomotive engineers must feel.”

Hail speaks for the Unocal employees who once manned the Jeansville steam pumps in Central California. Clearly, the multi-ton machines strike a nostalgic and sentimental chord with these Refining & Marketing Division workers.

For 76 years, the immense steam pumps faithfully pumped crude from the San Joaquin Valley oil fields to the Pacific Coast for shipping to refineries. It wasn’t until just three years ago that Unocal finally retired the last three from duty. The venerable apparatuses were replaced with electric and natural gas engine-driven pumps — modern-day machinery that is smaller, quieter

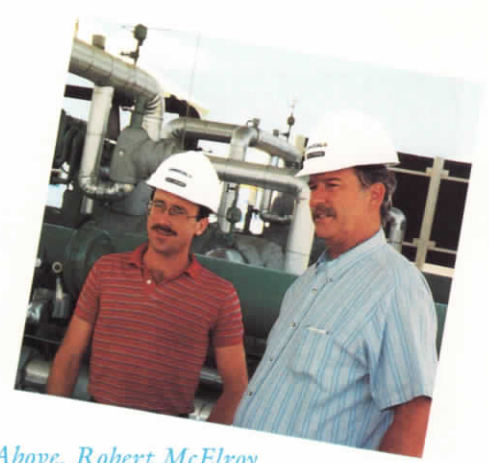
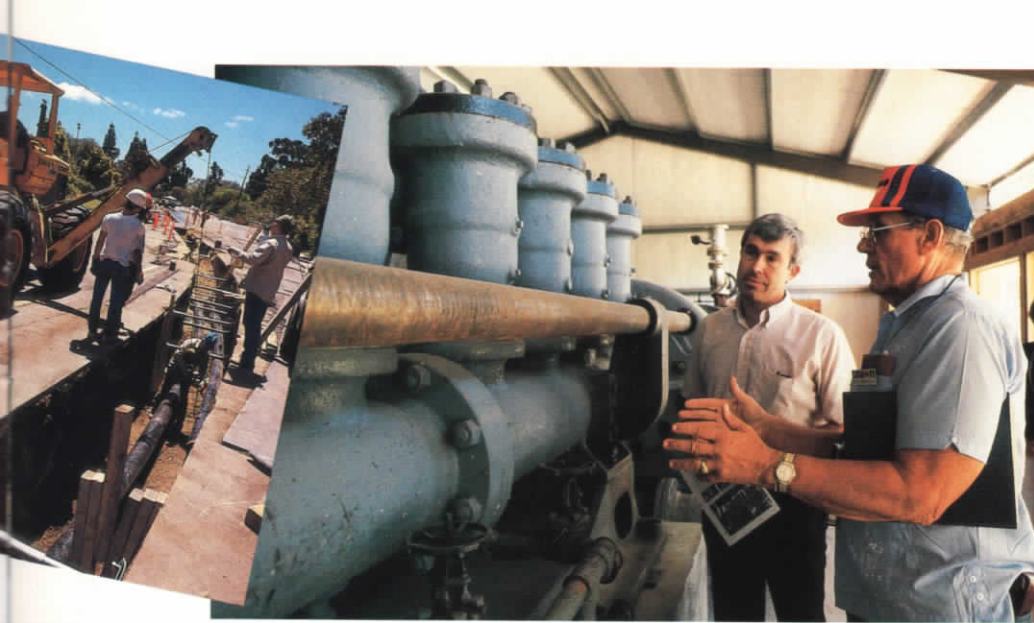
and more efficient to operate.

But Hail and his “old-timer” colleagues aren’t planning to forget the Jeansville steam pumps, and neither is the Central California town of Paso Robles. The community’s aficionados of oil industry history have found an ideal home for the last remaining Jeansville pump — the local museum.

“As far as we know, this is the last pump of its kind in the world,” says Ole Viborg, a local resident whose father-in-law, Charles Woodland, tended the pumps years ago. Viborg and other volunteers formed the Jeansville Pump Museum Society. The volunteer group convinced the Pioneer Historical Society, which operates the El Paso de Robles Area Pioneer Museum, that the pumps played a prominent role in the region’s history.

Below, a mule team transports one of the steam boilers to a pump station site in 1909. Opposite, one of the pipeline’s construction crews poses.





Above, Robert McElroy (left) with District Foreman Bill Coleman. Left, Unocal retiree Donald "Dutch" Van Harreveld (right)—one of the Jeansville pump preservationists—talks with a visitor at the museum exhibit.

The machine on display at the museum operated at a pump station outside the town of Shandon. It pumped oil almost continuously for 76 years until finally being retired in March of 1986. Similar steam pumps in Creston and Santa Margarita ceased operation in June of that year.

"Over the years, as our other steam pumps (there were 14 in all) were replaced, they were all junked," explains Robert McElroy, district superintendent for the Coast Area, Northern California Division Pipelines. "But Unocal saved the Shandon pump, hoping to find a permanent home for it. We wanted to help preserve a slice of the region's history."

The Shandon pump measures 47 feet long, 18 feet wide and 14 feet high. It weighs 70 tons. The massive piece

of equipment was part of the original pipeline system that linked the Taft area in the San Joaquin Valley to the company's marine terminal at Avila, near San Luis Obispo. Construction of the system, completed in 1910, was truly a colossal project for its day. The line stretched over 240 miles, cutting across the La Panza and San Lucia mountains.

The pipeline was finished in record time. The first pipe section was laid in July of 1909, and oil began flowing through the system the following March. W.L. Stewart, son of Lyman Stewart (one of Unocal's founders), oversaw the system's construction.

"It took the original crew under a year to build the pipeline," observes Ron James, division superintendent, Northern California Division Pipelines. "But today, just completing the re-

quired permitting for such a pipeline would take at least two years."

The line satisfied the urgent need to transport oil out of the San Joaquin Valley. By 1909, California had emerged as the nation's leading oil producing state, and California's most prodigious production was in the San Joaquin Valley. In the valley, 150 small oil companies had banded together to form a group called the Independent Producers Agency.

Unocal joined forces with the agency to build the much needed pipeline. The company already operated a shorter pipeline, which linked Santa Barbara County's Orcutt field to Avila. Unocal and the agency shared the cost of the new 8-inch pipeline's construction, with Unocal eventually gaining control of the entire pipeline.





When first built, the system had the capacity to pump 24,000 barrels of oil per day and store 27,000,000 barrels. The line's seven pumping stations provided the power to drive the oil. Each station utilized two steam pumps.

In acquiring the Jeansville pumps to power the new system, the company was taking a calculated risk. "There wasn't any guarantee that they could pump oil," Hail explains. "The equipment had previously been used to pump molasses." But Unocal engineers theorized that the heavy, highly viscous oil found in Central California shared roughly the same consistency as molasses. They were proved right, as the pumps worked perfectly.

"The guy who came up with the idea to try the steam pumps deserved a feather in his cap," Hail says.

According to local legend, the equipment, manufactured by Jeansville Iron Works, was originally used in Georgia to pump molasses into ships. The vessels transported the molasses to a Caribbean rum distillery.

After being shipped to California, the steam pumps were brought to the pipeline construction site by mule teams. During the early days of the pipeline's operation, work crews lived in bunkhouses at the pump stations and worked 12-hour shifts. The pumps, which operated around the clock using high-pressure steam, required constant monitoring. In addition to specialized maintenance skills, a trained and sensitive ear was often a pump tender's most valuable asset.

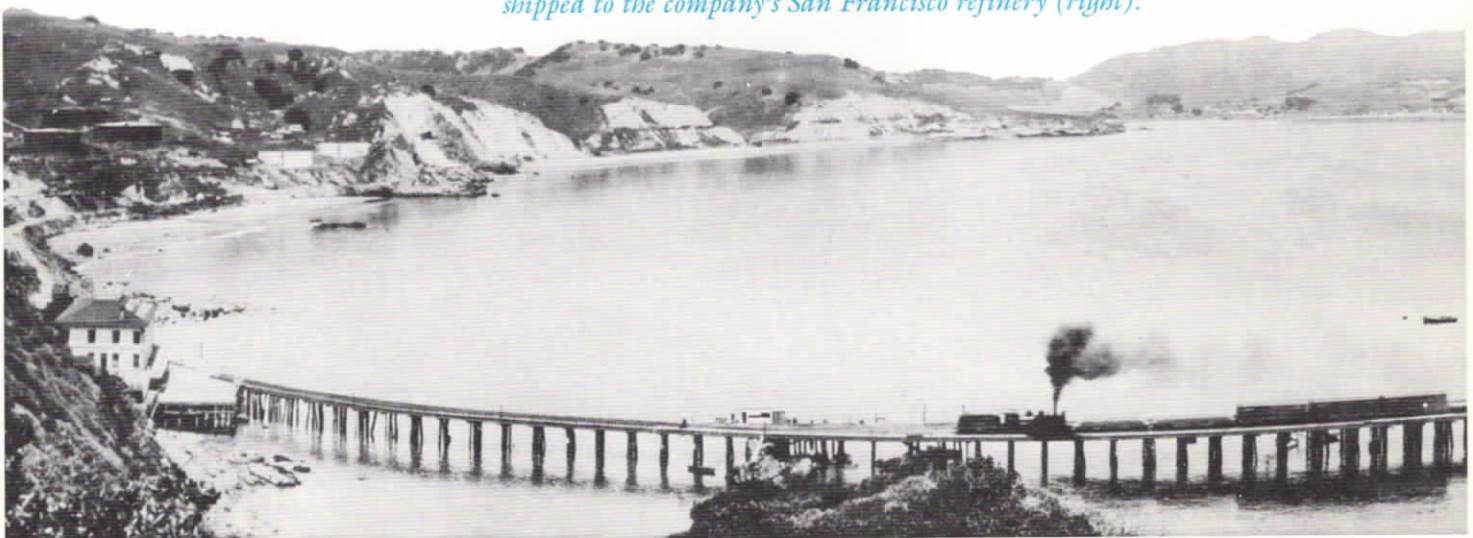
"All of the pumps had unique personalities," explains Jerry Luther,

another veteran utilityman. "Each one had its own distinctive sound and rhythm. They would talk to you, and if one had a problem, you could tell from the sound the minute you walked into the station."

The machines made a loud, thumping noise when operating—quite a contrast to the new electric and gas engine pumps, which emit a low, steady whine. The steam-operated units were visual marvels of intricate moving parts. Each pump had four massive boilers, and used two at a time. The boilers each generated 250 horsepower, enabling the larger of the pumping units to pump up to 1,000 barrels of oil per hour.

"Sometimes I would climb up on a ladder just to watch all the parts operate," Luther says. "The old pumps were truly amazing. The new equip-

Below, a turn-of-the-century view of the Avila terminal. From Avila, crude oil was shipped to the company's San Francisco refinery (right).





Far left, the original San Joaquin Valley pipeline transported crude oil from Central California fields to a coastal terminal at Avila. Middle, veteran Unocal utilitymen Jerry Luther (left) and Tom Hail, who once tended the Jeansville pumps.

ment has no visible moving parts.”

In spite of these intricacies, the Jeansville machines were incredibly reliable, requiring few repairs. Over the years, the piping in the system was replaced, but the pumps endured. They remained economical to operate because maintenance costs continued to stay low year after year.

“The unit in Creston was so trouble-free, it could go for 40 or 50 days with no maintenance work other than lubrication and oil changes,” Hail recalls.

By 1986, however, the era of the Jeansville pumps was drawing to a close. “They finally became uneconomical to run due to staffing requirements and other operating costs which increased over the years,” McElroy says. “Another major concern was the availability of replacement parts. The pumps

were true antiques. We couldn’t just call up a manufacturer and order a new flywheel or boiler part. All the parts had to be custom made.”

The task of transporting the last remaining pump from Shandon to the Paso Robles museum proved to be monumental, attesting to the dedication of the machine’s enthusiasts. After the equipment was dismantled, no fewer than eight flatbed trucks were needed to haul the parts.

Construction of a structure to house the pump has now been completed. “Eventually, we’re going to repaint the pump and completely restore it,” says Steve Hansen, a local farmer involved in the effort. “The grandkids of the pump tenders will be able to view it.”

When the exhibit is complete, it will also feature old photos taken during the

pumps’ heyday and other mementos, such as log books and oil cans from the early 1900s. The display has been built with donated funds and volunteer labor.

Today, the pipeline’s seven pumping stations continue to move oil from Unocal’s San Joaquin Valley fields to the terminal at Avila. The modern electric and natural gas engine-powered units—considerably more compact than the steam pumps—are each capable of pumping 600 barrels per hour. And unlike their antiquated counterparts, the new computer-controlled pumps are remotely operated from offices in Santa Margarita and Los Angeles.

“The new pumps are very impressive,” McElroy says. “They’re completely automated, efficient and very reliable. But you have to wonder—will they last for 76 years?” C.S. 76



SERVING CUSTOMERS FOR THE LONG HAUL

When truck fleet supervisor Carl Martin returned to his office after lunch, three troubling messages awaited him. "Cancel tomorrow's scheduled pick-up in Minneapolis due to a labor strike," read one. "Truck #34 is disabled in Knoxville; needs fuel pump repair," said another. "Injured ankle exiting truck in St. Louis; unable to drive," proclaimed a third.

In the past, such a series of mishaps would have given Martin instant heartburn. The firm's delivery schedule would be in disarray, and a hectic afternoon of phone calls to customers, suppliers, mechanics and drivers would be needed to set things right.

Today, however, the phone stayed in the cradle and the antacids in the drawer. Sitting down at a computer terminal, Martin quickly punched a few keys. Within seconds, he had entered "Access 76"—Unocal's new computer system designed expressly to serve its national auto/truckstop customers.

The first order of business was the canceled Minneapolis load. Punching in a code for his Minneapolis-bound driver, Martin noted that her last fuel purchase was at the Unocal 76 auto/truckstop in Bloomington, Illinois. She would be refueling at the Madison, Wisconsin facility next. Martin typed a message for the driver: "Scratch Minneapolis pick-up; proceed to Milwaukee terminal." The written order would automatically print out on the invoice issued to the driver in Madison.

Next, Martin accessed the purchase authorization file, and approved an emergency expenditure for the fuel pump repair work. The authorization was instantly transmitted to the Unocal truckstop in Knoxville. Punching up the driver's itinerary, Martin saw that the delay would not affect his delivery schedule.

Finally, the fleet supervisor typed in a message for his injured driver, who was stranded at Unocal's auto/truckstop west of St. Louis: "Relief driver will be dispatched from Memphis. Get to a doctor and have that ankle looked at."

The above scenario is fictional. But it illustrates just how valuable a management tool Access 76 can be for the nation's truck fleet operators. The new computer system also exemplifies how Unocal's auto/truckstop network is responding to the needs of its customers—truck fleet owners, drivers and long-distance auto travelers.

Three years ago, Unocal launched a campaign to firmly establish its network as the country's premier auto/truckstop system. Before charting the course of the campaign, however, the company sought advice from recognized experts—the truckstop customers themselves. Each of the subsequent refinements—ranging from more stringent truckstop security measures to healthier restaurant menu items—can be traced to the results of extensive customer surveys. The most innovative new program to emerge from the campaign is Access 76.

Brought on line early this year, the Access 76 system bridges the gap between fleet operators and their drivers. Using a computer and telephone modem, fleet managers can scan up-to-the-minute records of their drivers' truckstop purchases. By reviewing updated records, trucking managers can also keep abreast of their drivers' whereabouts, locate shipments and estimate delivery and pick-up times.

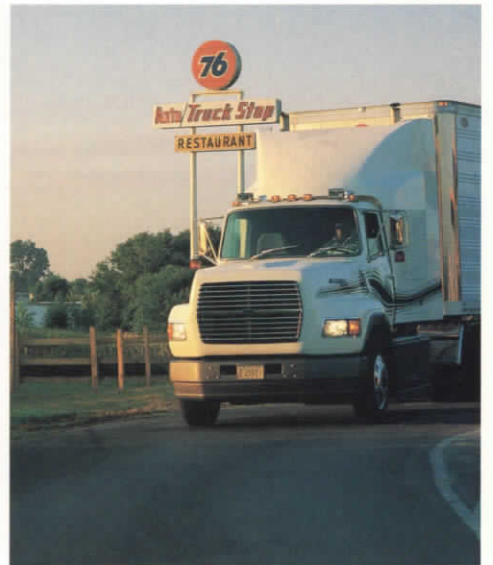
Access 76 also helps fleet managers keep a firm handle on their truckstop expenditures. The managers can issue Access 76 charge cards to their drivers, and stipulate what restrictions apply to the use of each particular card account number. The limits fleet operators can impose are wide ranging. For example, they may stipulate where and when a particular trucker may fuel up, to ensure that the driver doesn't stray from an assigned route. They can set limits on purchases and cash disbursements for individual drivers. They can even decide to have Access 76 charge cards kept at specific truckstops, where they're made available to authorized drivers only.

Assigned spending and service limits, however, won't straitjacket a driver if unexpected trouble and expenses arise. Fleet managers can easily authorize changes to any restrictions previously assigned. They can either issue a new purchase order to override established limits, or else change the spending ceiling directly on the computer.

Access 76 also affords fleet operators more options and greater flexibility in scheduling jobs. This is because the system's message service lets managers communicate with their drivers. If a fleet operator receives a last-minute request for a truck in Toledo, for example, a driver who just made a delivery in Cleveland can be dispatched to pick up the load.

"We designed Access 76 to help the fleets manage their business," explains Clint Mercer, general manager of Unocal's national auto/truckstops system. "The fleet operators decide how the program will work for them. They can tailor Access 76 to meet their own requirements."

Unocal's auto/truckstop network, one of the nation's largest, focuses on responding to customer needs.



The Access 76 computer network bridges the gap between truck fleet operators and their drivers.



The main computer control center for Access 76 is located at Unocal's office in Schaumburg, Illinois. At the heart of the system is the Digital VAX Cluster, a computer that's essentially a cluster of mini-computers. The system functions 24 hours a day—and uninterrupted operation is vital. Long-haul trucks are on the road at all hours. If a truckstop operator isn't able to verify a purchase authorization on the spot, drivers linked to the system can't pay for fuel or other services.

Bearing this in mind, Unocal ordered a custom-made computer system replete with redundant functions and operational safeguards. Additional processing units can also be easily integrated into the VAX Cluster, which eases the process of system upgrading when needed.

"In the event of a power outage, the system automatically shifts to battery operation—and a gasoline-powered generator keeps the batteries charged," explains Jeff Smith, who manages the Access 76 computer network. To ensure the system's continuous accessibility to fleet operators, the control center employs two separate telephone systems.

Because it has more than 200 programming functions, bringing the Access 76 system on line was quite an endeavor, Smith recalls. "At one point, we had 26 programmers working at the same time," he says. Today, a staff of eight programmers lends its expertise to Access 76. The main computer control room is monitored around the clock, every day.

With Access 76 among its services, Unocal is now poised to attract more customers in the fiercely competitive truckstop business. With over 300 auto/truckstops operating in 43 states, Unocal boasts one of the largest truckstop networks in the nation. A total of 150 of these facilities are full-service operations located on federal interstate highways. These facilities generally include a restaurant, telephone center and store, as well as lounges, private showers and laundry facilities for professional drivers.

"Today, Access 76 is the glue that bonds our auto/truckstop network together," says John Fitzgerald, national sales manager. "The system provides fleets with a means for effective long-distance management. However, fleet managers can't take full advantage of Access 76 unless their drivers patronize Unocal truckstops exclusively. Otherwise, records of purchases and services are incomplete, and efforts to track drivers and control over-the-road expenses become futile." As a result, more fleet owners are relying on the Unocal auto/truckstop network for fueling, truck servicing, management information and driver satisfaction.

"Access 76 gives us a large measure of control," says Max Fuller, vice president of U.S. Express, a major trucking company. "In the past, I had to wait until I received credit card bills in the mail to see a record of driver purchases. That could take up to 30 days. Now, I can tap into the computer system and know instantly what purchases our drivers have made."

"We're getting more business every day because of Access 76," says Jim Norton, general manager of a Unocal auto/truckstop in West Memphis, Arkansas. "The fleet owners like the system because they have immediate access to so much information. And it has improved our customer service by speeding up our billing procedure."

Capturing the loyalty of a major trucking fleet represents an enviable coup in the truckstop business. To compete in today's market, a truckstop chain must be equipped to satisfy the needs of the country's biggest fleets. Clearly, the trucking industry is growing more and more consolidated. In fact, only two percent of the nation's large fleets do 45 percent of the total trucking volume. (A large fleet has a minimum of 400 trucks; the biggest operators have upwards of 4,000.) The value of drawing big-rig customers is unmistakable. One 18-wheeler alone consumes an average of 90 to 100 gallons of fuel each day.

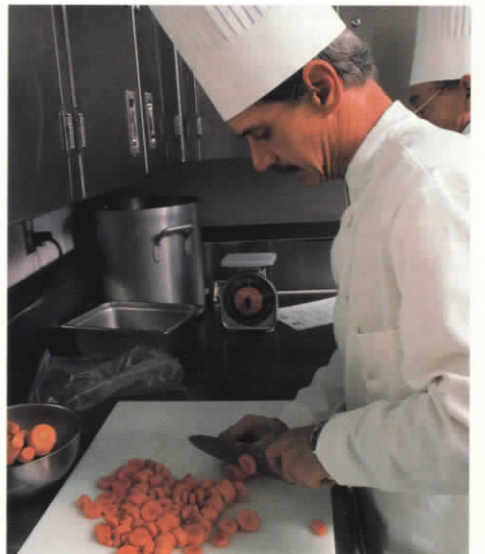
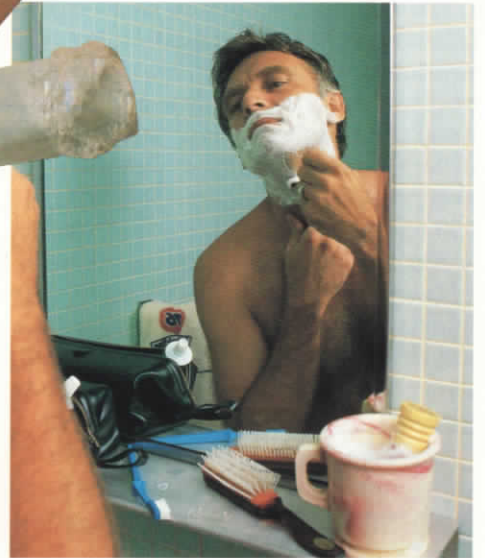
To ensure that Unocal's truckstop service remains attuned to customer needs, company personnel continue to meet regularly with representatives from major truck fleets. "It's important that we continue to identify the needs—both present and future—of the major fleet operators," explains Paul McDowell, an auto/truckstops area sales manager. "They represent a large segment of our business, and opening the lines of communication with our customers has been very successful for us. Access 76 grew out of such communication."

Fleet operators aren't the only customers Unocal is eager to hear from, however. Company personnel also meet regularly with groups of drivers to identify their particular needs. In addition, Unocal hired a marketing research firm to survey drivers who patronize company truckstops. The one-on-one interviews address everything from the quality of food to the attitude projected by truckstop employees. At each of the registered interstate truckstops, approximately 150 drivers are polled each year.

Past survey results prompted Unocal to raise the already high standards for the cleanliness, safety and appearance of its truckstops. As a result, the company expanded many of the facilities, adding more telephones, private showers and lounges. To promote proper maintenance by truckstop operators, Unocal established a Five Star Appearance Award. The honor is given only to auto/truckstops that meet over 600 stringent specifications. Unocal inspects each facility three times a year.

"We give truckstop operators and their employees precise standards for rating the quality of their truckstops," Mercer says. "Operating conditions, cleanliness and safety are all taken into account." Moreover, the company has developed an instructional program aimed at upholding strict requirements for truckstop safety and environment. The program's videotapes, manuals and training materials are all made available to truckstop staffs.

"Our entire organization shares a commitment to customer service," says National Auto/Truckstops general manager Clint Mercer. Bottom right, an auto/truckstop restaurant manager learns new food preparation techniques at a workshop held by Unocal in Houston.



Unocal has also sought to win truckers' loyalty by pleasing their palates. The company recently introduced two new categories of menu items—the American Traditions Signature Series and the Power Food Series—in its truckstop restaurants.

American Traditions entrees include such perennial favorites as country-fried steak and hot roast beef sandwiches. The Power Food line represents a new direction in menu offerings. All Power Food selections comply with American Heart Association recommendations for controlling fat, cholesterol, calories and sodium in the diet. Menu items in this category include griddled chicken breast, halibut steak and omelets made with egg substitutes.

"We're concerned about the health of our truck-driver customers," says Tom Guiney, manager of restaurant programs for National Auto/Truckstops. "The Power Food program is a positive way to act on that concern." A large number of truckers share this heightened awareness of the need for healthier eating. Before introducing the Power Food line, Unocal surveyed its truckstop restaurant customers, asking them if they wanted low-fat, low-cholesterol dishes added to the menu. Fifty-eight percent said they did.

"Still, some truck drivers are reluctant to try the Power Food," Guiney admits. "They assume that healthy food lacks taste and doesn't really satisfy. But generally once they give it a chance, they're hooked."

Unocal is encouraging its auto/truckstop operators to use the company's recipes for American Traditions and Power Food items in their restaurants. "By doing so, we can maintain uniformity," Guiney says. "If a customer enjoys the steak or halibut entree at a truckstop in Pennsylvania, he can order the item again in Texas and receive the same level of quality."

Also this year, Unocal began offering a restaurant workshop for auto/truckstop management. The week-long seminars, held at the University of Houston, are designed for new and veteran Unocal restaurant managers alike. The program includes instruction on preparing Power Food and American Traditions items, using sauces and gravies to enhance entrees, and maintaining sanitary conditions. Students also receive tips on employee management, cost control and the use of computers for accounting and inventory monitoring.

"The workshop helped me broaden my general knowledge of the restaurant business," says Dennis Maupin, general manager of an auto/truckstop in Kingman, Arizona. "I particularly became more aware of the responsibilities assumed by a restaurant manager."

The workshops also give restaurant managers the opportunity to compare notes with their counterparts from other regions of the country. "Through our round-table discussions, we found that we have many of the same concerns," says Glenda Moore, restaurant manager at an auto/truckstop in Vero Beach, Florida. "Sharing ideas proved very helpful."

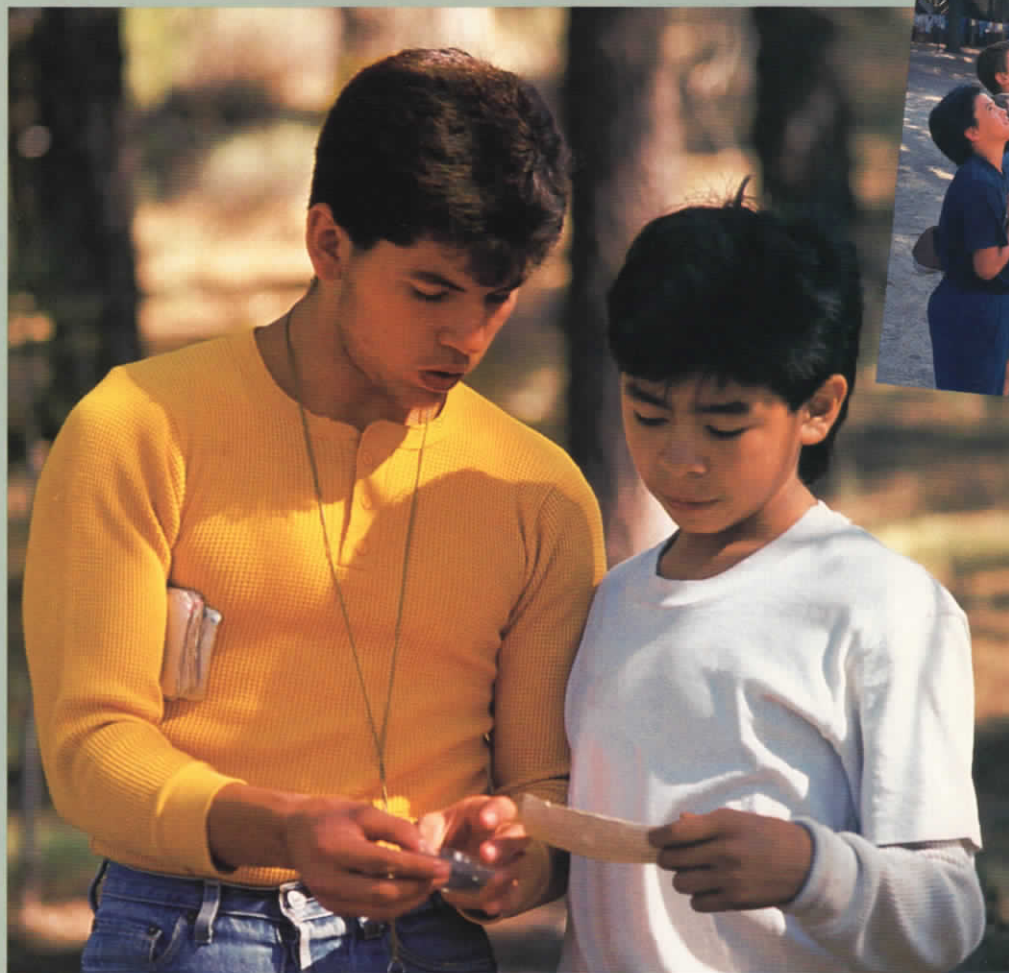
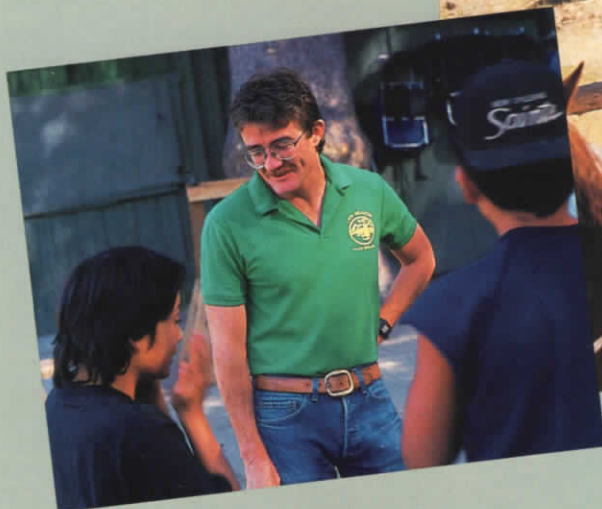
Unocal's efforts to respond to customer needs and improve its truckstops have drawn strong support from the truckstop operators and their staffs. "Unocal's auto/truckstop network has established an overall mission of satisfying the customer," Paul McDowell explains. "Our motto is, 'Bring 'em back happy.' The company and the truckstop operators are working together as a team to achieve this. And the operators aren't merely complying with our raised standards, they're fully committed to them."

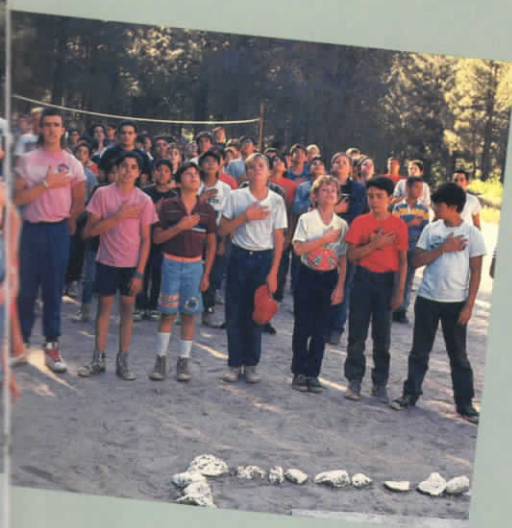
It is this high level of commitment that continues to distinguish Unocal 76 auto/truckstops from the competition.

"The entire organization shares a totally focused commitment to customer service," Mercer says. "Our goal is to make sure that our customers come back happy, and to do all we can to help keep their trucks moving on America's highways." C.S. 76

a guiding HANDS

Clockwise from right: the Pyles Camp activities include horseback riding, a morning flag ceremony, and wilderness orienteering; camp director Paul "Rocky" Leitzel chats with some of the campers.





“Our main goal at Pyles is to teach kids how to make positive decisions in life.”

In 1939, Americans were treated to a short respite from their Great Depression woes when Frank Capra released his classic film *Mr. Smith Goes to Washington*. The movie starred a very young Jimmy Stewart as Jefferson Smith, a naive citizen from Middle America who is sent to Washington, D. C., as an honorary Senator. Against great odds, Smith fulfills his dream of founding a non-profit boys camp for underprivileged, inner-city kids. His goal is to give youths an opportunity to explore the wonders of nature for a few weeks. He also hopes to teach them respect for their country and themselves.

Well, some say such realized visions only exist in the movies. But in 1949, a veteran California oil man, Bob Pyles, founded such a summer camp. Sharing the same enthusiasm that gripped Jefferson Smith, Pyles turned to his friends in the oil industry—including Unocal—for financial assistance to start the project. He leased a beautiful, 40-acre meadow up in California’s eastern Sierra Nevada mountains to base the camp.

Situated 100 miles northeast of Bakersfield, Lloyds Meadow was the kind of place Pyles—a disadvantaged, fatherless youth himself—dreamed about as a kid. Surrounded by tall granite peaks, fresh-water streams and acres of beautiful redwood groves, this meadow would prove to be the ideal location for Pyles to fulfill his goal of helping troubled young men become successful.

With the help of friends, Pyles began bringing scrap materials up to the forest to build cabins and other facilities. Everything had to be hauled in by mules for the last seven miles because no roads to the site existed back then. Today, the camp boasts 20 buildings with plumbing and electricity.

After 40 years, the R. M. Pyles Boys Camp is still flourishing—having offered over 17,000 underprivileged boys an opportunity to “seek another way.” “Our main goal is to teach kids how to make positive decisions in life,” says Paul “Rocky” Leitzel, the camp’s director. “We teach them to respect themselves and others. The entire time they’re up here, we also give them huge doses of love.”

Since the camp’s inception, Unocal has been a major sponsor and today remains an active supporter. In the ’50s, Unocal President A. C. Rubel served on the camp’s board of directors. Currently, former CEO Fred L. Hartley and Chief Landman Herb Harry are active directors.

“We firmly believe in the camp’s commitment to the well-being of these kids,” says Harry, whose involvement spans 20 years. The program is funded by oil company contributions, private donations and industry-backed fundraisers held in Bakersfield, Los Angeles, Ventura and Santa Maria. The oil industry also sponsors two “work parties” every spring, enlisting volunteers to spend weekends helping get the camp in shape for the summer.

Five hundred boys each year are selected from seven oil-producing counties in California to spend two weeks up at Pyles—free of charge. Selected by school counselors, police officers and welfare agencies, the boys must be between 12 and 16 years of age, and must come from families that could not afford to send them to a regular summer camp.

The kids have generally grown up in low-income areas where gang activity and drug use are common. Victims of their environment, they are children who could easily be sucked into a life of crime or drug abuse.



When you grow up around crime and junkies, that's all you know," says Frank Zarazoga, a camp counselor from the East Los Angeles area. "Who can you turn to?"

Pyles campers are often from single-parent families or foster homes, and many feel neglected. Chris Griffith, a juvenile detective for the city of Orange, has been selecting kids for the Pyles program since 1980. Part of Griffith's duty as a "selector" is to meet with the kids' parents and request permission to send them to camp. "Too often the parents are apathetic," he says. "Sometimes I can't even track them down. Witnessing such negligence is the hardest part of my job."

Once a child makes it up to Pyles, however, he's completely removed from this tragically common scenario. The program takes the youth away from the noise and the stress he faces in the city, and offers him an experience designed to raise his self-esteem and sense of social responsibility.

The program emphasizes teamwork, cleanliness, respect and hard work—and it begins the moment the kids arrive. As soon as the bus drops them off, the youths are instructed to walk the remaining seven miles to Lloyd's Meadow. The counselors then divide them up into squads of eight, purposely selecting kids from different ethnic groups.

The Pyles routine is highly structured. Campers are subjected to a daily cabin inspection, during which a group's tidiness is rated on a one-to-10 point scale. Each morning, the kids spend an hour helping to maintain the grounds and facilities. Some are even assigned to kitchen patrol.

But in between all these duties, the boys find time to have a lot of fun. Activities include horseback riding, nature study, arts and crafts, archery and physical fitness exercises. When evening rolls around, the kids and counselors gather around a campfire to trade tall tales and conduct sing-alongs.

The campers are also sent on a five-day backpacking trip into the Golden Trout Wilderness, during which they are challenged both physically and emotionally. The hikes average 70 miles, and begin with a one-and-one-half-mile trek up a nearby mountain. During the hikes, counselors talk openly with the kids about drugs, sex, poverty, parental problems, school and peer pressure.

These strenuous hikes are generally the turning point in the campers' experience. The first few days, fights often break out as some of the kids release hostilities and pent up frustrations. Singing at the first campfire is minimal, with a lot of the boys "too cool" to join in. "Many of the kids come here with serious attitude problems," says Leitzel. "They've had 12 to 16 years to become tough, and we only have two weeks to break through that."

But as the program's high success rate suggests, the counselors do break through to the kids. "One of the reasons the camp does so well with these kids is simply because Pyles is not a business," says Chris Griffith. "The only people profiting from Pyles are the kids. The people running the program firmly believe in it and want to be involved."

The reason for this is simple—90 percent of the staff members are former Pyles campers who worked their way up through the ranks. Each year, sixty youths are selected to return the following summer as "honor campers."



Above, a youth practices his newly acquired archery skills. Right and below, campers tool leather at the arts and crafts table.





**“While at the camp,
I started to feel
good about myself
for the first time.”**

“We look for kids who have spirit and have demonstrated leadership potential and the ability to work hard,” says Leitzel. “We also look for boys who haven’t been around many people who love and care about them.”

The honor campers are sent to a remote backcountry area called Lion Meadows, which was purchased by the camp 10 years ago. Located 12 miles from the main Pyles facility, the 120-acre site has no running water or electricity, and its only amenity is a cooking shack. During the two-week Lion Meadows program, future Pyles Boys Camp workers and counselors are selected by current staff members. These “Lioneers” are then trained by the staff for another two weeks.

Leitzel was a Pyles camper himself in 1969, when he was 13 years old. He, like many of the youngsters, came from a broken home. His mother was working two jobs while trying to raise four boys. The stress caused her to suffer a nervous breakdown.

A school counselor selected Leitzel for Pyles. “While at the camp, I started to feel good about myself for the first time. It really changed my perspective,” says Leitzel, who now lives in Canyon Country during the off-season with his wife and daughter. “Smoky (Bob McAdams, the camp’s director for 25 years) became the father I never had.”

Today, Leitzel is sharing that legacy with other campers. One 17-year-old Pyles worker, named Aaron, says this of Leitzel: “I have complete and total respect for Rocky. I have the same feeling for Rocky that he has for Smoky.”

A father figure was something sorely missing from Aaron’s young life. The soft-spoken Orange County youth comes from a single-parent family of eight. To support the household, Aaron’s mother turned to dealing drugs. She also became an addict herself.



Iknew what my mother was doing was wrong, and I didn't have anybody to turn to," he says. Wearing a Batman T-shirt and sweat pants, Aaron looks like the All-American kid. His cheerful manner does not reveal signs of a troubled childhood. But as he reflects on those years, he refers to himself as "one stressed-out little kid."

Eventually the pressure from Aaron's home life became so unbearable that he ran away, only to return after living on the streets for three days. Fearing for the safety of his younger brothers and sisters, Aaron turned his mother in to the local police. The younger siblings were sent to foster homes, and Aaron was sent to a youth shelter. A counselor there chose him as a candidate for Pyles.

"I was really paranoid when I first arrived," says Aaron. "I didn't have much faith in anyone." After five days of hiking in the wilderness, Aaron's attitude changed dramatically. "Seeing nature up close really affected me. I realized there were a lot of beautiful things in life I never stopped to think about," he says. "And more importantly, for the first time, I really felt that people were listening to me and that they cared about me."

Aaron was invited back as a Pioneer and is currently in charge of the camp's laundry facilities. He hopes to become a counselor next year. "I really believe in the Pyles spirit. And I know that my life has taken a turn for the better."

"One thing's for sure - when the kids leave here, they know that someone cares."



Above, camp worker Aaron (left) takes a break with Fernando Ortiz, the program's assistant director.





Above, Pyles campers are selected by school counselors, police officers and welfare agencies. The boys must be between 12 and 16 years of age, and must come from underprivileged backgrounds. Left, a camper tests his athletic abilities on the fitness course.



Another of the program's goals is to instill in the boys the value of education. "We not only emphasize finishing high school, but we impress upon them the importance of going to college," says Leitzel. To assist campers who continue on to college, Pyles offers a scholarship program.

Aaron, who will be attending junior college this fall, is a Pyles scholarship recipient. "I have ambitions now that I never had before," says Aaron, who wants to study acting and social work in college.

After nine years of selecting kids for the camp, Dr. Alan Schramm has amassed scores of Pyles success stories, many comparable to Aaron's. Of the first two boys he sent to the camp, Schramm says, "Pyles accomplished in two weeks what I hadn't been able to do for two years."

Schramm, a psychologist from Orange County, had been trying to find an alternative method for treating the two troubled youths. He learned about the program at Pyles from a probation officer. "The officer told me, 'I don't know what they do up there, but it works. The kids come back changed.' He was right," says Schramm.

The two boys Schramm recommended went on to become honor campers and began working at Pyles the following year. "After their success, I went up to see for myself what the program was all about, and I really got caught up in the Pyles spirit," says Schramm, who now serves on the board of directors.

The Pyles program makes it difficult for kids to forget the experience—and that's one of its greatest assets.

"The program doesn't end after the two weeks spent here," says Leitzel. "Counselors check up on the campers' progress annually. We also respond to concerned parents who call on us when a former camper is having problems."

Each Pyles alumnus is invited to a winter reunion during the holidays. At the event, they can reacquaint themselves with staff members and also meet various contributors. Former campers also receive a newsletter which updates them on Pyles activities. "We get letters from the kids too, letting us know how they're doing," Leitzel says. "Sometimes they come from kids you thought hadn't responded to the program. Receiving these letters is one of the most rewarding aspects of my job."

Special relationships often form between Pyles staffers and campers. During one session this past summer, Aaron met a boy from a large family with drug-dependent members. "I related to him because our experiences were so similar," Aaron says. "I kept in touch with him, and later on took him to Knott's Berry Farm. I wanted to show him that there are other things out there, that it's fun to be a kid. We had a blast."

Aaron pauses for a moment as he reflects on the experience. "All the kids who come here want happy endings," he says. "They don't want to be criminals. They want to feel that they're loved and respected. And one thing's for sure—when the kids leave here, they know that someone cares." H. S. 76





The 1989-1990 United Way campaign in Los Angeles was kicked off with a street fair held outside Unocal Center on October 10.



Celebrating Giving

Donning an old-fashioned swimsuit—complete with tank top and striped, knee-length trunks—Richard J. Stegemeier sat precariously in the caged water tank, looking out from under his boater hat and into the cheering crowd. “Throw it harder!” he shouted. A softball whizzed through the air, just missing a nearby target.

But Stegemeier’s antagonist, dressed in a business suit, was determined. The youthful executive clutched another softball, eyed the circular target and began one more windup.

This time, the ball struck the target dead-on. Horns blared, red lights flashed and Stegemeier’s seat collapsed. Unocal’s chairman and chief executive officer was soaked.

Stegemeier was one of six Los Angeles business leaders drenched in the “Executive Dunk Tank” at the United Way Street Fair, held in October outside Unocal Center. With Unocal serving as host, the fair officially launched the 1989-90 fund-raising campaign for United Way’s Los Angeles Metropolitan Region. Stegemeier is the region’s 1989-90 campaign chairman.



Above, Unocal CEO Richard J. Stegemeier takes his turn in the dunk tank. Far left, he returns to try his luck at dunking another executive. The dunk tank and other attractions drew several thousand downtown workers to the fair.

The three-hour event drew several thousand employees from downtown businesses. The dunk tank was one of the day's most popular attractions. For a \$5 contribution to United Way, fairgoers had three chances to hit a target with a softball. A bull's-eye put the captive executive into the water—an opportunity that proved irresistible for more than a few attendees. By the time Stegemeier toweled off, his tormenters had dunked him 17 times—all in the interest of charity, of course.

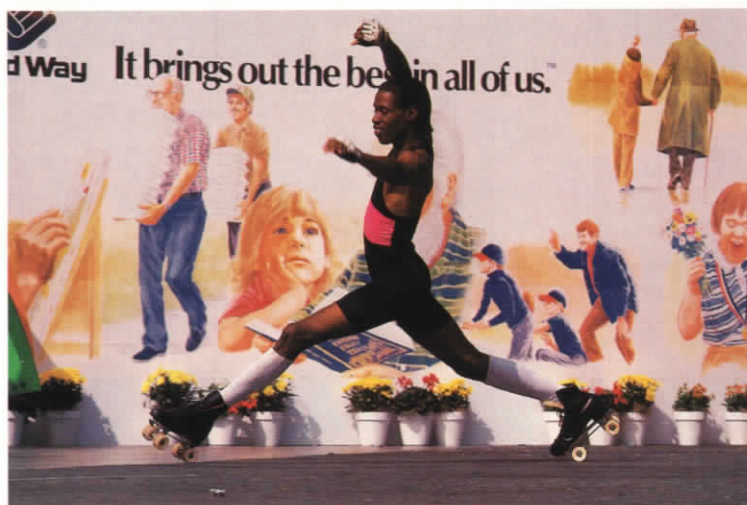
Other business leaders taking the plunge were Jim McElvany, executive vice president of Johnson & Higgins; H. Trevor Jones, regional vice president of the Pacific Telesis Group; Jack Grundhofer, vice chairman of Wells Fargo Bank; Bob Smith, president and CEO of Security Pacific Bank; and Al Thiess, managing partner of Coopers & Lybrand.

The fair's lineup of entertainment included the acrobatic team of Eric and Amelie, who captivated the audience with their balancing precision. The duo is featured in the Montreal circus troupe Cirque Du Soleil.

The Bel Air Bandits, a band with a rather eclectic play list, provided live music. The musicians performed everything from polkas to Beach Boys oldies. Additional acts included the Midnight Sun, a dance group that performed on roller skates; Kids Unlimited, a children's dance troupe; the Bell Choir, a bell-ringing group composed of developmentally disabled individuals; and the Unionaires, Unocal's own singing ensemble.



Above, a fairgoer tests her arm at the dunk tank. Above right, Stegemeier addresses the crowd.



To be sure, this year's campaign kick-off was quite different from the indoor luncheons that have traditionally ushered in fund-raising drives for the Metropolitan Region. But the United Way campaign's goal—raising \$30 million from the Region, and a total of \$95 million from the greater Los Angeles area as a whole—warranted something spectacular.

Holding a street fair was only fitting, Stegemeier told the crowd, because it “brings together the spirit, energy and enthusiasm that makes Los Angeles such a great city.”

In a momentary break from the festivities, Stegemeier also stressed the urgent need to support United Way's local efforts. “The problems that affect our city touch the lives of all of us,” he said. To amplify his point, he cited several social ills plaguing Los Angeles—including illiteracy, drug abuse and gang violence.

Last year, United Way supported 350 health and human service groups in the Los Angeles area. These organizations—many of which do not have the resources to mount effective fund-raising efforts on their own—provided emergency food, shelter and assistance to more than 746,000 families, children and adults.

United Way itself keeps operating costs at a minimum. In fact, 86.5 cents of every donated dollar goes directly to agencies serving people in need, says Frank Snedeker, vice president and campaign director for United Way's Los Angeles Metropolitan Region.



Hosted by Unocal, the street fair featured food, live entertainment, door prizes and other attractions. Above center, the logos of United Way's Los Angeles-area corporate supporters are displayed.

“This year, we particularly want to give high priority to programs addressing AIDS, homelessness, illiteracy and child care,” Snedeker says. “Contributors can designate which agencies they want to donate to, or they can leave all the logistics to us.” Many companies, including Unocal, allow employees to have their United Way pledges automatically deducted from their paychecks over the course of a year.

While Unocal hosted this year’s kickoff fair, other businesses also contributed to its success. Several companies donated door prizes for the event. These included an IBM personal computer, paid vacations, a television set, a VCR, gift certificates for restaurants and department stores, compact discs, furniture and artwork.

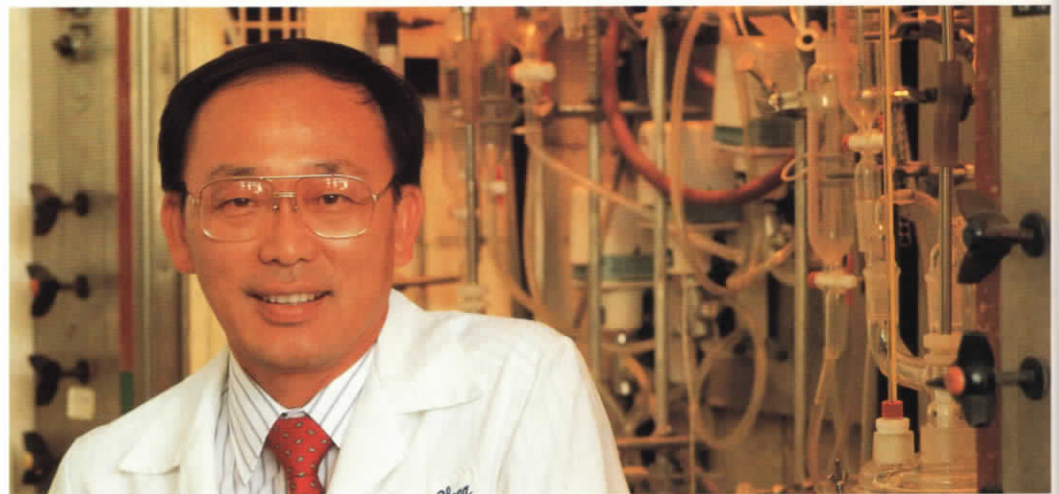
A number of local restaurants operated food booths on the fairgrounds, offering a wide variety of ethnic dishes. Elsewhere, exhibits highlighted products of the future, including a 21st-century bicycle with “superconductive hubless rims.”

“We transformed a street into a United Way event,” summed up United Way of Los Angeles President Leo P. Cornelius, while addressing the fairgoers. As added incentive, Cornelius challenged Los Angeles to raise more United Way funds than Chicago—which finished first nationally among metropolitan areas last year.

“We’re (Los Angeles) going to meet our fund-raising goal, and we’re going to top Chicago!” he said.

Judging by the crowd response, Chicagoans had better be prepared for some stiff competition. C.S. 76

A TEAM EFFORT





Facing page: Michael Chang (top) and father Joe, a Unocal Science & Technology Division employee. Joe began teaching his son tennis at an early age, and today remains his primary coach and manager. This page, middle: Joe and wife Betty watch their son compete in the Volvo/Los Angeles tournament in September.



Most of the notations on the chalkboard are what you'd expect to find in the office of a research chemist: numbers, a few formulas, an equation or two. Also written on the board, however, are a couple of unlikely exhortations. "Beat Lendl!" one instructs. "Beat Edberg!" directs the other.

Elsewhere in the scientific world, such scribbles might seem out of place. But here they're to be expected. This is the office of Joe Chang, a research associate at Unocal's Fred L. Hartley Research Center in Brea, California. Joe is the father of 17-year-old Michael Chang, who earlier this year became the youngest male player ever to win the French Open tennis championship, and the first American man to do so since Tony Trabert in 1955.

On the slow red clay of Stade Roland Garros in Paris last June, Chang followed to the letter the orders on that chalkboard in his father's office. He came from behind to defeat Sweden's Stefan Edberg in a five-set final.

Earlier in the grueling, two-week tournament—considered the most demanding in professional tennis—Chang had staged an even more remarkable rally. In the round of 16, he dropped the first two sets to Ivan Lendl, the world's number one ranked player and a three-time French Open champion. But then Chang, who never counts himself out of a match, came back. Despite leg cramps that severely reduced his vaunted mobility, he won the next three sets to take the match.

On match point, after Lendl had faulted on first serve, Chang moved in all the way to the service line to receive the second serve. The audacious ploy rattled the usually stoic Lendl. His second serve went into the net, giving Chang the match and advancing him to the quarterfinals.

It was perhaps the most dramatic example of Michael Chang's capacity to play the game to the hilt mentally as well as physically. "Mental toughness is definitely my biggest strength," Chang says. "If I didn't have the mental part of the game, I probably wouldn't be where I am at the moment."

That characteristic is winning him a lot of attention among other players on the tour. "This guy is unbelievable for his age," John McEnroe has marveled. "Chang is very, very strong mentally."

Arthur Ashe, a former Wimbledon and U. S. Open champion, has compared Chang's intuition on the court to that of a young chess prodigy. "He's easily the smartest young player I have ever seen," Ashe has said. "You see him do things on the court that you would expect to see from someone who's been on the tour for years."

These heady notices and accomplishments gratify Joe Chang, who joined Unocal in 1985. He began teaching the game to Michael when his son was just six years old. Today, he remains Michael's primary coach and manager.

Still, the elder Chang is not altogether flabbergasted by his son's progress. To an extent, he saw it coming. Two years ago, Joe predicted that "by the time Michael is 17 or 18 years old, he'll be able to challenge any tennis player in the world."

Now that Michael is fulfilling that prophecy, Joe sees little change in his son, himself or his family.

“None of us, including Michael himself, has ever doubted his ability or competitive spirit,” Joe says. “But I think winning the French Open gave Michael confidence in a different way. Now he knows he is able to play five sets with anyone. Before, he always worried about his endurance.”

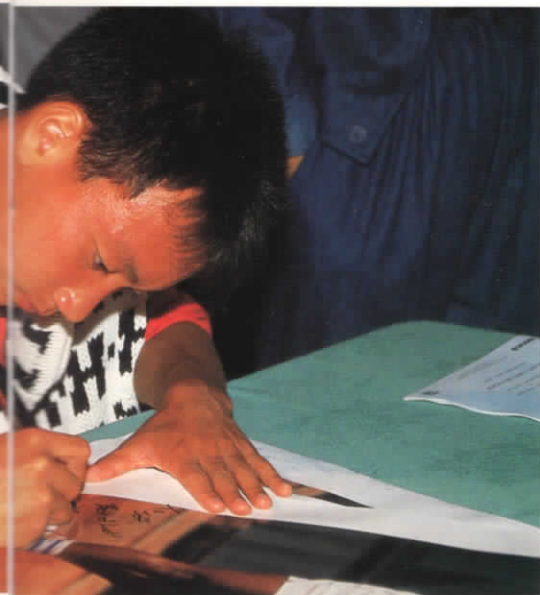
The main reason little has changed for the Changs—along with Joe and Michael, there’s wife Betty and older brother Carl—is simply that they’ve been at it so long. The brothers were notable players almost from the time Joe began teaching them the game in St. Paul, Minnesota. Twenty-year-old Carl is a junior at the University of California, Berkeley, which he attends on a full tennis scholarship.

Michael worked his way up through the ranks of talented junior tennis players, first in St. Paul, then in San Diego, where the family moved in 1979 so the brothers could play more tennis against tougher competition. The Changs now live in Placentia, California, an Orange County suburb close to Unocal’s Research Center.

On the advice of his father, Michael turned professional in January of 1988, and everything else, school included, took a back seat. Chang quit high school after passing an exam for a graduate equivalency certificate, and joined the pro tour.

“It really didn’t make sense for him to stay in high school for two more years,” Joe Chang says. “He would have lost too much time. In addition, it really costs you a lot financially to play the professional circuit as an amateur because you can’t win any money.”





"None of us in the family, including Michael, has ever doubted his ability or competitive spirit," says Joe Chang. Joe is confident that Michael will handle his success well. The young Chang can learn from his father's example: in his short time with Unocal, Joe has developed five new paper-coating products.

The deciding factor was a lucrative three-year endorsement contract from an athletic shoe and clothing manufacturer. The decision to turn pro has also proven fruitful for Michael on the court. Going into the U.S. Open in late August, his tournament earnings for 1989 were about \$400,000. Michael added to that total in September, when he reached the finals of the Volvo/Los Angeles tournament—a Unocal-sponsored event. Chang lost a close match to 22-year-old Aaron Krickstein to place second in the tournament.

"The endorsement contract was a once-in-a-lifetime opportunity," Joe Chang says. "Our thinking was that if Michael didn't succeed on the tour within three years, he could leave and go to college."

For a young man in Michael Chang's position, however, the significance of a college education pales considerably. "I think most people confuse the importance of college," says Joe Chang. "People say, 'Go to college to get a degree.' They should say, 'Go to college to get an *education*.' They're two different things."

The senior Chang, who attended college in Taiwan and the United States to become a research chemist, recognizes the value of an education. He hopes that when Michael retires from tennis and is ready to go to college, if he decides to, he'll know what his educational interests are.

Some regret may tinge Joe Chang's voice when he talks about "the tremendous teen-age life" his son is missing. "But I think no matter what you do, if you want to be the best in a particular field, there is always sacrifice," he says. Clearly, Michael wants, eventually, to be the best tennis player in the world. And he's willing to make the necessary sacrifices to get there. But there's one sacrifice he does not intend to make—that of his principles.

"The money and the attention really don't have too much of an effect on me," he says. "They haven't changed me as a person. I'm looking to be the best person I can be, as well as the best tennis player."

Joe Chang is confident that Michael will handle his success well. The young Chang can certainly learn from the example set by his father. In his short time with Unocal, Joe Chang has developed five new paper-coating products. Using polystyrene and polyvinyl acetate latexes as bases, Chang came up with various substances that improve the gloss, flexibility and strength of paper.

Recently, Chang undertook a new challenge outside of the research arena. As of last October, he began working for the Science & Technology Division's Technical Sales Department. And this may put him in direct competition with his son's intense travel schedule. Chang, whose family emigrated from China in 1948, will be in charge of Unocal's Asian territories.

"I haven't been back to China since I came to the U.S.," he says. "I'm looking forward to the experience. I have a 90-year-old grandmother I would very much like to see."

In between his travels for Unocal, Joe plans to continue supporting his young son's tennis efforts. With his characteristic optimism, he says this of Michael's recent loss at the Volvo/Los Angeles tournament: "I've told Michael that to be a champion, you have to learn how to win and how to lose. I'm behind him every step of the way." 76

Story by Art Bentley.

UNOCAL 76

CORPORATE

35 YEARS Herbert G. Baumgaertner, Unocal Center
Robert L. Humphrey, Unocal Center
Samuel Merker, Schaumburg, Il.
Holdek Mielke, Unocal Center
Frank G. Pierce, Unocal Center

30 YEARS Robert R. O'Berg, Unocal Center
Caroline C. Schwindt, Unocal Center

25 YEARS Lilly A. Abulhassan, Unocal Center
Lesley Horsfall, Unocal Center
Diana C. Hyland, Unocal Center
Alma O. Jarque, Unocal Center

20 YEARS Marilyn K. Allison, Schaumburg, Il.
Eleanor E. Cuneo, Unocal Center
John R. Ljung, Unocal Center
Jean S. Prus, Schaumburg, Il.
Narayanan Sankaran, Unocal Center
Bettylou H. Steadman, Unocal Center
James F. Wyrick, Schaumburg, Il.

15 YEARS James B. Blair, Unocal Center
Dennis P.R. Codon, Unocal Center
Gerald C. Dohm, Jr., Unocal Center
Harold E. Zahner, Unocal Center

10 YEARS Harold E. Anger, Sr., Bremer, Ca.
Velia Bustamente, Unocal Center
Josephine G. Dainius, Schaumburg, Il.
Judith C. Grant, Unocal Center
Ingrid D. Impink, Washington, D.C.
Mark L. Jost, Orcutt, Ca.
James T. McAfee, Ventura, Ca.
Juan S. Pallorina, Unocal Center
Christopher R. Sinichko, Bakersfield, Ca.
Andrew E. Viens, New York, NY

REAL ESTATE

15 YEARS Alan M. Hawickhorst, Unocal Center

ENERGY MINING

10 YEARS Heraclio Anaya, Parachute, Co.
David J. Gunderson, Parachute, Co.
Edwin R. Johnson, Parachute, Co.
Ronald A. Wrigley, Parachute, Co.

SCIENCE & TECHNOLOGY

25 YEARS John R. Fox, Brea, Ca.
A.M. Sam Sarem, Brea, Ca.

20 YEARS Woo Ill Lee, Brea, Ca.
Robert E. Miller, Brea, Ca.
Richard L. Pilling, Brea, Ca.
Barbara J. Roesler, Brea, Ca.
Milan Skripek, Brea, Ca.
Frank W. Stechmeyer, Brea, Ca.
Roy T. Tatar, Brea, Ca.
Gladys V. Woolf, Brea, Ca.
Horst E. Zilch, Brea, Ca.

15 YEARS Rosanna Babcock, Brea, Ca.
Floyd E. Bingham, Brea, Ca.
Frederick S. Borgens, Brea, Ca.
John S. Mahar, Brea, Ca.
Robert L. Russell, Brea, Ca.
Gregory F. Wirzbicki, Brea, Ca.
Bradley K. Yurenko, Brea, Ca.

10 YEARS Timothy D. Anderson, Brea, Ca.
Marcia Lou Bohnsack, Brea, Ca.
Thomas L. Elliott, Brea, Ca.
Fernando A. Gallard, Brea, Ca.
Marjorie M. Hatter, Brea, Ca.
Woonsing W. Huang, Brea, Ca.
David M. Ingle, Brea, Ca.
Diane D. Kanne, Brea, Ca.
Jack G. Kelly, Brea, Ca.
Peter Kokayeff, Brea, Ca.
Shirley M. Lemoine, Brea, Ca.
Mark A. Peterson, Brea, Ca.
Gabriele T. Rau, Brea, Ca.
Ruby Scott, Brea, Ca.
Steven R. Tarbox, Brea, Ca.
Arthur S. Trevena, Brea, Ca.
James W. Warren, Brea, Ca.
Larry A. Williams, Brea, Ca.
John V. Yeiral, Brea, Ca.

ENERGY RESOURCES

OIL & GAS

25 YEARS Benjamin T. Brown, Houston, Tx.
James R. Callender, Unocal Center
David R. Hill, Bakersfield, Ca.
Jimmie A. Hurt, Oklahoma City, Ok.
Murphy J. Pellegrin, Jr., Houma, La.

20 YEARS Dennis F. Buckley, Cut Bank, Mt.
John W. Shastid, Ventura, Ca.

15 YEARS Gary D. George, Anchorage, Ak.
Thomas W. Grimm, Santa Fe Springs, Ca.
Norma K. Kinney, Kenai, Ak.
James F. Lloyd, Unocal Center
Byron P. Nanini, Cut Bank, Mt.
Paul W. Neubauer, Casper, Wyo.
Carl W. Patridge, Jr., West Liberty, Il.
Jan E. Quilty, Jackson, Ms.
Barbara A. Shannon, Pasadena, Ca.

10 YEARS Glen M. Gatenby, Houston, Tx.
Roger D. Hebert, Dulac, La.
Gregory T. Leyendecker, Midland, Tx.
George A. Livesay, Midland, Tx.
Keneth J. Lucas, Anchorage, Ak.
Dale A. Njaa, Anchorage, Ak.
Jeffrey W. Nutter, Van, Tx.
George R. Pruitt, III, Lafayette, La.
Kevin A. Tabler, Anchorage, Ak.
Marie C. Wakefield, Pasadena, Ca.
Larry W. Weaver, Chunchula, Al.
Fred E. Young, Carpenteria, Ca.

INTERNATIONAL OIL & GAS

25 YEARS Norman K. Christie, Los Angeles

20 YEARS Robert A. Davis, Los Angeles
Lindsay G. Few, Ecuador
Philip G. Kraemer, Jakarta
Gary D. Lower, Netherlands
John E. Sherborne, Los Angeles
Adrian F. Turney, Thailand

15 YEARS Ashley J. Boyd, Thailand
Michael E. Fields, Los Angeles
Karen P. Lenik, Los Angeles

10 YEARS Lorena Ballote, Los Angeles
Christopher A. Costelloe, Thailand
David A. Duncan, Norway
Leslie J. Edwards, Thailand
Sasitorn V. Eldredge, Los Angeles
Martha J. Hall-Burr, Los Angeles
Paul A. Kinmond, Thailand
Donnie L. Layton, Thailand
David H. St. John, Jakarta
Frederick W. Shepherd, Los Angeles
Russell K. Small, Los Angeles
Neil L. Smith, Ecuador
Paul L.G. Ware, Jakarta
Peter G. Western, Egypt

Unocal Thailand, Ltd.

15 YEARS Atchara Arthivitas
Chern Manusjan
Somwang Wangdewa

10 YEARS Duangkhae Boonyapakdi
Pornate Hasadisevee
Anake Jitrakrob
Nanthika Mingkwan
Kanjana Nakdee
Ladaluck Nilayon
Somsak Pinyovitayawong
Sukanya Prasansapt
Pairin Raggatanyoo
Naowarat Rickard
Jit Roongcharoon
Wantana Sinhaseni
Viporn Sirilerdchai
Dej-Udom Sirisukha
Narong Sookmitr
Supoch Supprasert
Maneerat Tantipong

Unocal Indonesia, Ltd.

15 YEARS Darwanto
Firmanudin
Julianto
Karimun
Kusnomo
Ngaturi
Soeab
Soentoro
Soeparno
Soepriyadi
Soetrisno
Sugiharto
Sugito
Suharmanto
Sukisno
Sunaryo
Suwadij
Suwono
Tukiman
Wahono
Waluyanto
Dayat A.R.
Achmad Basir
Anthon Pinang Bilatto
Sofyan Effendy
Indrarini Harsoyo
Mrs. Emmy Haryono
Satu Jacob
Henry Victor Kalesaran
Sjachrir Khalid
Pither Yacob Laa
Hengky H. Lapien
Murhansjah M.S.
Mrs. Juliani Malelo
Ruben Mangopo
Wien Mochtar
Sole Palimbongan
Johny Pangemanan
Bertha A. Rantung
Wiyadi Setiawan
Daantje Setlight
Andarias Sulo
Harmanto Sumantri
Wim Sumarandak
J.T. Tandikala
Willem Tangka
Gunanto Wahyu

10 YEARS Miroso
Almunir Patonangi
Sriwijaya S.

Unocal U.K., Ltd.

15 YEARS Norman Boniface, London, England
Rose Goodley, London, England

10 YEARS Bruce Hermeston, Aberdeen, Scotland

Unocal Suez, Ltd.

15 YEARS Hussein Saleh, Egypt

10 YEARS Peter Western, Egypt

UNOCAL CANADA, LTD.

20 YEARS J. Russell Beatty, Calgary, Alberta
Byron R. Nate, Calgary, Alberta

15 YEARS Raymond D.C. Perrott, Calgary, Alberta
Walter P. Schoenberger, Calgary, Alberta
M. Craig Storey, Calgary, Alberta

10 YEARS Ronald B. Bysterveld, Calgary, Alberta
D. Scott Guthrie, Calgary, Alberta
Joan E. Johnston, Calgary, Alberta
Robert L. Shepherd, Calgary, Alberta
Tapio V. Tainio, Calgary, Alberta

GEOTHERMAL

25 YEARS Murrell L. Bratcher, Philippines
Ross P. Connelly, Unocal Center
Thomas N. Minette, Indonesia

20 YEARS Alan L. Gillette, Santa Rosa, Ca.

15 YEARS Joann Dittner, Santa Rosa, Ca.
Jack Hangan, Philippines
Larry R. Hampshire, Imperial Valley, Ca.
Wilda L. Malloroy, Santa Rosa, Ca.
Michael D. Watts, Italy
Frederick L. Wilson, Imperial Valley, Ca.

10 YEARS Wayne V. Blackwell, The Geysers
Daniel L. Carrier, Santa Rosa, Ca.
Sandra G. Flores, Imperial Valley, Ca.
Bobby E. Halman, Philippines
Patricia A. Swanson, Santa Rosa, Ca.

Philippine Geothermal, Inc.

10 YEARS Alberto C. Alvero, Bulalo
Lucila B. Blay, Makati
Nemesia C. Bron, Jr., Tiwi
Rolando B. Buena, Makati
Eugenio-Gani B. Cachero, Bulalo
Rolando C. Cavinta, Makati
Sergio M. Cruzat, Bulalo
Amelia R. Jaurique, Bulalo
Whilhelmino Q. Lim, Makati
Edilberto M. Madelar, Tiwi
Elisa H. Magpantay, Makati
Domingo M. Malabanan, Bulalo
Lolito L. Marasigan, Tiwi
Jose B. Palma, Makati
Ma. Josephine S. Paris, Makati
Fernando P. Perez, Bulalo
Roberto M. Quinto, Bulalo
Jose M. Satioquia, Bulalo
Ledda A. Vallejo, Makati
Alfredo M. Velasco, Bulalo

REFINING & MARKETING

40 YEARS Paul Geo Bissiri, San Francisco Refinery
Donald T. Hayes, Schaumburg, Il.
Albert M. Morrison, Birmingham, Al.

35 YEARS Gaylon W. Mason, Van, Tx.
Samuel Merker, Schaumburg, Il.
Helen G. Warriner, Oregon, Oh.

30 YEARS William E. Carson, Tallmadge, Oh.
James F. Crouse, Jr., Los Angeles, Ca.
Thomas L. Freer, Los Angeles Refinery
Joan I. Haden, Los Angeles, Ca.
Dennis C. Harrod, Schaumburg, Il.
Nancy F. Jencks, Schaumburg, Il.
Nadia A.H. Laham, Los Angeles, Ca.
William E. Malich, Jr., Atlanta, Ga.
Richard L. Parsons, Portland, Or.
Kenneth W. Pearson, Schaumburg, Il.
Connie J. Ronca, Los Angeles Refinery
Norman E. Schwenk, Los Angeles, Ca.
Raymond L. Souza, Honolulu, Hi.
Danice A. Yeakel, San Diego, Ca.

25 YEARS James L. Ashlock, Los Angeles, Ca.
Dale B. Bright, Portland, Or.
John R. Carter, Los Angeles Refinery
Barbara G. Clark-Lahey, San Luis Obispo, Ca.
John R. Dietzman, San Francisco Refinery
Gordon H. Ellings, San Francisco Refinery
George R. Fulton, Jr., Beaumont Refinery
William J. Kirchhoff, Berwyn, Il.
Robert W. Koehler, Salt Lake City, Ut.
Billy S. Roberson, Van, Tx.
Lucius E. Scott, Jr., Los Angeles, Ca.
Ronald E. Senner, Richmond, Ca.
Maria V. Teubert, Los Angeles, Ca.
Lloyd E. West, Santa Maria, Ca.
William N. West, Los Angeles, Ca.
Ronald L. Wolf, Schaumburg, Il.
Antonio D. Yap, Walnut Creek, Ca.

SERVICE AWARDS



20 YEARS Nancy A. Aguilera, Los Angeles, Ca.
Hattie L. Amer, Los Angeles, Ca.
Kenneth H. Anderson, Richmond, Ca.
Anthony C. Ballard, San Francisco Refinery
Bruce L. Berglund, Lemont, Il.
Warren W. Blackburn, San Francisco Refinery
Eraclo V. Borbon, Los Angeles Refinery
Linda L. Bricker, Schaumburg, Il.
James L. Chuan, San Francisco, Ca.
Pete Coronado, San Francisco, Ca.
Patrick W. Dennis, Los Angeles, Ca.
Theo Devers, Richmond, Ca.
Charles K. Emmons, Van, Tx.
William A. Ewing, San Francisco Refinery
Wendell E. Ewing, Edmond, Wa.
Charles S. Garrett, Santa Fe Springs, Ca.
Jacqueline J. Grelewicz, Schaumburg, Il.
Galen Hanes, San Francisco Refinery
Jeffrey L. Hansen, Tallmadge, Oh.
Le Ella Hanssler, Los Angeles, Ca.
Scott E. Hayes, Los Angeles, Ca.
Thomas H. Hulgan, Santa Maria, Ca.
Clayton C. Johnson, Tacoma, Wa.
Willis R. Joyner, Jr., Schaumburg, Il.
William Jurewicz, San Francisco, Ca.
John S. Lane, San Francisco Refinery
Clarence Lavalais, Nederland, Tx.
Cynthia L. Lee, Richmond, Ca.
William J. Mathis, III, Tampa, Ga.
Arif A. Mohd, Scahumburg, Il.
Dan A. Naive, Portland, Or.
Valerie E. Nishimura, San Francisco, Ca.
Eugene T. Paulick, Schaumburg, Il.
Antonio G. Perez, Richmond, Ca.
Catherine G. Poruba, Schaumburg, Il.
Lenard Richard, Nederland, Tx.
Frederick J. Sargent, Wildwood, Fl.
Terry W. Snider, Los Angeles Refinery
Lawrence J. Spears, Schaumburg, Il.
Herman R. Stewart, Tallmadge, Oh.
James C. Tibbetts, San Francisco, Ca.
William H. Troyer, Atlanta, Ga.
James C. Tibbetts, San Francisco Refinery
Peter V. Turner, Los Angeles, Ca.
Peter P. Villarreal, Nederland, Tx.
Alice M. Vincent, Seattle, Wa.
Dimitry O. Vishnevsky, Los Angeles Refinery
JoAnne H. West, Orange, Ca.

15 YEARS Suzan J. Alcorn, San Francisco, Ca.
Stephen N. Armandico, Santa Maria Refinery
Thomas W. Atkins, Los Angeles, Ca.
David A. Ball, San Francisco Refinery
Harry E. Bell, Los Angeles, Ca.
Linda A. Bills, Schaumburg, Il.
Michael W. Black, Los Angeles Refinery
Christine M. Borrow, San Francisco, Ca.
Benjamin D. Brown, San Francisco Refinery
Cecil A. Calban, San Francisco Refinery

SERVICE AWARDS



Sylvester T. Campbell, Los Angeles Refinery
 Patrick K. Chandler, San Francisco Refinery
 Joseph M. Cochran, San Francisco Refinery
 Darleen M. Deasee, Los Angeles Refinery
 George E. Dotson, Cincinnati, Oh.
 Karen McGillvray Edwards, Seattle, Wa.
 Charles T. Gaddy, Wildwood, Fl.
 Gaylon W. Grant, San Francisco Refinery
 Reginald E. Hill, Los Angeles Refinery
 Larry E. Jones, San Francisco Refinery
 Teresa M. Kelly, Schaumburg, Il.
 James C. King, Macon, Ga.
 Alice T. Law, San Francisco, Ca.
 Diane M. Leeb, Schaumburg, Il.
 Pedro M. Lopez, Los Angeles Refinery
 Jesse Luebanos, Mt. Prospect, Wi.
 Gene Mahon, Los Angeles, Ca.
 Richard Mante, Schaumburg, Il.
 Gary L. McKee, San Francisco Refinery
 Ronald A. Morsman, Portland, Or.
 Dennis T. Nakamura, San Maria Refinery
 Lawrence Pond, Los Angeles Refinery
 Angela O. Santos, San Francisco
 Jerry R. Smith, San Francisco Refinery
 Howard E. Straw, Los Angeles Refinery
 Brian Y. Sugita, Los Angeles Refinery
 Robert L. Unger, San Francisco Refinery
 David H. Williams, San Francisco Refinery
 Paul B. Williams, Edmonds, Wa.
 Wilmer F. Wittig, Lemont, Il.
 James W. Zeller, Atlanta, Ga.

10 YEARS Richard M. Adams, San Francisco Refinery
 Richard L. Albaugh, Jr., Lemont, Il.
 Robert J. Apodaca, San Francisco Refinery
 Kenneth R. Barton, III, Portland, Or.
 James L. Batove, Washington, Pa.
 Dennis E. Bennett, Taft, Ca.
 Gerald R. Bernard, Nederland, Tx.
 Delphine Blakely, Richmond, Ca.
 Linda A. Blankenship, Nederland, Tx.
 Ann L. Brandt, Pasadena, Ca.
 Dean L. Bray, Los Angeles, Ca.
 Douglas W. Carter, San Francisco Refinery
 Robert M. Castillo, Santa Maria Refinery
 Karen A. Clark, Schaumburg, Il.
 Charles R. Clegg, Los Angeles, Ca.
 Jeffrey D. Collins, San Francisco Refinery
 Carolyn Y. Daniels, Richmond, Ca.
 Donald E. Dawson, San Francisco Refinery
 Julie R. Deboves, Los Angeles, Ca.
 Mennen L. Delapena, San Francisco
 Michael J. Desisto, Los Angeles Refinery
 Mary E. Dinisi, Los Angeles, Ca.
 Katherine M. Dominguez, Los Angeles, Ca.
 Michael D. Drappo, Phoenix, Ar.
 Carla M. Drew, Schaumburg, Il.
 Gordon R. Ellis, Los Angeles, Ca.
 Benjamin P. Esparza, Los Angeles Refinery
 Lorraine M. Estrada, Los Angeles, Ca.
 Michael R. Farmer, Avila Beach, Ca.
 William F. Felix, San Francisco Refinery
 Shirley A. Ferrara, Richmond, Ca.
 Mark S. Finklestein, San Francisco Refinery
 F. Brandon Fojtik, Chicago Refinery
 Gale M. Gangi, Schaumburg, Il.

Ramon Garcia, Chicago Refinery
 Jules M. Goller, Jr., Wildwood, Fl.
 Elizabeth D. Greiner, San Francisco, Ca.
 Shirley R. Guidry, Nederland, Tx.
 Pamela D. Hermann, Santa Fe Springs, Ca.
 William Herrick, Los Angeles, Ca.
 Michael L. Hickenbottom, Chicago Refinery
 Charlene Hicks, Chicago Refinery
 Patricia R. Higgs, San Diego, Ca.
 Bruce L. Holdren, Santa Maria Refinery
 Elizabeth Y. Ipac, San Francisco
 JoAnn Jacob, San Francisco, Ca.
 Myrna G. Jones, Schaumburg, Il.
 Frank E. Kamradt, Chicago Refinery
 Larry S. Kemp, Nederland, Tx.
 Bobby S. Kilpatrick, Nederland, Tx.
 Bonnie F. Kirk, San Francisco
 Suzanne G. Kothera, Schaumburg, Il.
 Denis S. Kramer, Chicago Refinery
 Kenneth A. Larson, Chicago Refinery
 Vicenta D. Laxa, San Francisco, Ca.
 Lena N.F. Loh, San Francisco, Ca.
 Norman R. Lyles, McKittrick, Ca.
 Beverly A. Marvin, San Francisco, Ca.
 K. McGovern-Fitzpatrick, Schaumburg, Il.
 Jesse M. Menchaca, San Luis Obispo, Ca.
 Steven C. Mitchell, San Francisco Refinery
 Kelly H. Murphy, Phoenix, Ar.
 Randall S. Myers, Los Angeles, Ca.
 Juan M. Ochoa, Richmond, Ca.
 Florencia C. Padojino, San Francisco, Ca.
 Roland B. Parker, Colton, Ca.
 Dennis J. Pransky, Chicago Refinery
 Phillip J. Prevost, Nederland, Tx.
 Devon L. Rathbun, Los Angeles, Ca.
 Kathleen Redelmann, Schaumburg, Il.
 Sandra L. Robison, San Francisco Refinery
 Ronnie E. Roush, Chicago Refinery
 Priscilla B. Sabido, San Francisco
 Linda J. Sadine, Schaumburg, Il.
 Paul L. Schrader, San Francisco Refinery
 Robert F. Sharp, Los Angeles, Ca.
 Tina L. Simms, San Francisco
 Frances Skotzko, Schaumburg, Il.
 Charles R. Stout, Bloomington, Ca.
 Patricia M. Sullivan, Bloomington, Ca.
 Sarojini N. Surve, Schaumburg, Il.
 Patrick R. Swinney, Nederland, Tx.
 Mark E. Viator, Nederland, Tx.
 Nelia L. Teneza, San Francisco, Ca.
 Lien T. Tran, San Francisco, Ca.
 Lelo V. Washington, Nederland, Tx.
 Kenneth I. White, Chicago Refinery
 Constance J. Williams, Los Angeles, Ca.

MARKETERS & DISTRIBUTORS

55 YEARS Dumas Oil Co., Goldsboro, N.C.
 50 YEARS Bublitz Oil Co., Inc., Tawas City, Mi.
 Parker Oil Co., Inc., South Hill, Va.
 40 YEARS Cedar Bluff Oil Co., Inc., Cedar Bluff, Al.
 35 YEARS Gnepper Oil Co., Fremont, Oh.
 30 YEARS Kawaihae Terminals, Inc., Kamuela, Hi.
 Pri-Mar Petroleum Inc., St. Joseph, Mi.
 25 YEARS Martin-Matthews Inc., Beaumont, Tx.
 Newton Oil Co., Inc., Greenville, Al.
 20 YEARS James P. Ellis, Weaverville, Ca.
 Winn Oil Co., Inc., Madisonville, Ky.
 15 YEARS Blarney Castle Oil Co., Bear Lake, Mi.
 J&H Oil Co., Inc., Wyoming, Mi.
 Northwest Enterprises Inc., Lima, Oh.
 Pittman Oil Co., Inc., Durand, Wi.

CHEMICALS

35 YEARS William Bowles, Unocal Center
 Robert J. Wagner, Schaumburg, Il.
 30 YEARS Byron L. Coker, Tucker, Ga.
 Bruce E. Faaborg, Oakland, Ca.
 William J. Hammond, Atlanta, Ga.
 Daniel J. Henry, Lemont, Il.
 Burt Mack, Unocal Center
 Paul R. Robinson, Wilmington, N.C.
 25 YEARS Freddie L. Harry, Charlotte, N.C.
 Eugene McEntire, Charlotte, N.C.
 Myron W. Wolansky, Clark, N.J.
 Robert W. Waddell, Brea, Ca.
 20 YEARS Normand L. Blais, E. Providence, R.I.
 David E. Hacherl, Kenai, Ak.
 C.E. Cook, Houston, Tx.
 Rodney D. Johnson, Schaumburg, Il.
 Wanda L. Lamb, Charlotte, N.C.
 David Nordy, Boise, Id.
 Vicky L. Smith, Charlotte, N.C.
 William R. Stephens, La Mirada, Ca.
 Wayne R. Williams, Charlotte, N.C.
 15 YEARS Edward L. Bowman, Atlanta, Ga.
 Ricky L. Cline, Charlotte, N.C.
 Patrick F. Earley, La Mirada, Ca.
 Tom A. Gordon, Kenai, Ak.
 Anita K. Horler, Schaumburg, Il.
 John C. Montoya, Brea, Ca.
 Stein Ohrstrom, Schaumburg, Il.
 Lembit K. Parik, Lemont, Il.
 Paul S. Pfeifer, La Mirada, Ca.
 Ralph Rea, Arroyo Grande, Ca.
 James E. Waite, Brea, Ca.
 Richard J. Williams, La Mirada, Ca.
 Rosemary M. Williams, Schaumburg, Il.
 10 YEARS Thomas A. Aguilar, Rodeo, Ca.
 Edwin F. Akins, Jr., Lemont, Il.
 Rosalyn K. Atkins, Atlanta, Ga.
 James A. Buma, Brea, Ca.
 Brian J. Clark, Clark, N.J.
 Rodney Gilge, Brea, Ca.
 Pauline E. Goecke, Kenai, Ak.
 James F. Grobarcik, Lemont, Il.
 Preston Hemphill, Jr., Rodeo, Ca.
 Annette King, Unocal Center
 Brian J. Loudy, Clark, N.J.
 Clifford E. Mathis, Brea, Ca.
 Dean P. Mounts, Arroyo Grande, Ca.
 J.R. Phillips, Schaumburg, Il.
 Yvette Richardson, Unocal Center
 James T. Saake, Unocal Center
 Robert A. Salvetti, Rodeo, Ca.
 Doris E. Wichmann, Schaumburg, Il.

MOLYCORP, INC.

20 YEARS Jean G. Cisneros, Questa, N.M.
 Jane Zielensky, Washington, Pa.
 15 YEARS William E. Doyle, Mountain Pass, Ca.
 Raymond Hawryluk, Washington, Pa.
 Ralph D. Somers, Mountain Pass, Ca.
 Stephen L. Winton, Mountain Pass, Ca.
 10 YEARS Norma S. Lim, Unocal Center
 Janet T. Moskal, Louviers, Co.

POCO GRAPHITE, INC.

20 YEARS Dexter E. Agee, Decatur, Tx.
 Rosemary Chambers, Decatur, Tx.
 David H. Dodson, Decatur, Tx.
 Dorrel F. Jones, Decatur, Tx.
 10 YEARS Edwin T. Czubakowski, Decatur, Tx.
 Ernest Fuentes, Jr., Decatur, Tx.
 Santos Luevano, Decatur, Tx.
 Phillip C. Parson, Decatur, Tx.
 Luann Rutherford, Decatur, Tx.
 Larry J. Wallace, Decatur, Tx.

RETIREMENTS

Corporate

Edmund J. Bailey, September 14, 1953
Tyler Brinker, January 24, 1953
Grace R. Oakley, November 30, 1953

Oil & Gas

Hugh C. Albertson, October 23, 1951
Donald M. Allis, January 23, 1967
Donald J. Arceneaux, December 16, 1957
Joseph E. Barbier, June 14, 1961
Dwight B. Berson, February 1, 1944
Leonard Bourque, February 13, 1956
Francis C. Breaux, February 4, 1957
Charles L. Broussard, January 14, 1957
Adeline I. Camperi, September 10, 1962
Billy Carnahan, May 1, 1946
Raymond F. Carr, March 11, 1970
Alvin E. Carver, May 26, 1948
Charles H. Case, January 14, 1963
Clifford J. Chapman, May 2, 1984
Richard L. Cook, March 8, 1950
Billy B. Dickard, January 29, 1951
Merle D. Dickens, January 11, 1960
Jave V. Dill, January 16, 1961
Duane A. Foster, September 23, 1948
Edward R. Fries, February 16, 1956
Raymond P. Hebert, May 30, 1957
Charles C. Heinbach, February 17, 1954
Langford W. Henshaw, September 1, 1956
Alfred B. Horaist, Jr., May 1, 1966
Emmett P. Horn, September 25, 1961
Joanne G. Hovden, August 24, 1950
Dalton L. Hudson, September 25, 1967
Ruth Deane Jackson, May 3, 1961
Helen R. Ketelsen, June 12, 1958
Fred H. Kirby, May 27, 1952
John H. Kosarek, December 15, 1960
George E. Kurash, Jr., September 25, 1961
Harold A. LeBlanc, January 9, 1957
Clyde E. Leach, December 8, 1952
Harriet M. Lutt, May 6, 1958
Henry S. Marquis, March 7, 1960
Lorne D. McCluskey, February 9, 1970
Roderick McLennan, February 1, 1954
Donald P. Monniere, May 8, 1963
James V. Motley, October 5, 1953
Helen M. Namba, June 1, 1955
Joseph E. Navarre, Jr., September 13, 1952
Fred H. Neal, April 20, 1967
Jack J. Norris, July 1, 1960
Raymond A. Oliver, November 16, 1933
Harold W. Piland, June 16, 1973
Roger M. Pinson, June 2, 1953
Maxell Porter, July 5, 1960
Patricia A. Reagan, June 18, 1951
Harold E. Rentrop, Jr., September 29, 1959
James E. Robertson, June 18, 1952
Charles K. Rose, October 31, 1955
Robert B. Schultz, November 1, 1974
Eugene A. Selph, April 6, 1960
Grantlen O. Shannahan, April 18, 1951
Warren R. Shepherd, February 18, 1952
Harry L. Simon, September 4, 1957
Hilton A. Smith, November 11, 1946
James L. Smith, February 5, 1962
Jerry J. Theriot, December 9, 1957
Clayton G. Wailes, July 14, 1955
Carl E. Waller, August 13, 1956
Lenard B. Watts, May 1, 1965
Robert W. Whitney, August 20, 1964
Joan I. Winterer, June 21, 1976

Science & Technology

John D. Crandall, July 13, 1964
Guenter J. Hinck, July 30, 1965
Gerald W. Simmons, July 1, 1947

Refining & Marketing

Marilyn D. Dunlop, October 24, 1966
Spencer L. Jayne, May 15, 1967
William J. Kirby, January 19, 1959
Eleanor G. Marzillo, February 9, 1970
Lillian F. Petersen, January 16, 1979
Robert G. Roll, September 23, 1968
Herbert R. Taylor, February 4, 1958
Norman L. Voth, April 30, 1979

Raymond E. Webb, June 19, 1950
Benjamin F. Winch, January 10, 1955

Geothermal

Carel Otte, April 1, 1957

Chemicals

Sherman W. Hobbs, October 11, 1976
Robert J. Wagner, August 1, 1954

IN MEMORIAM

EMPLOYEES

Oil & Gas

Peter L. Martin, July 22, 1989

Geothermal

Thomas L. Waggoner, July 22, 1989

Molycorp, Inc.

Maria Elena Ray, August 17, 1989

RETIREES

Corporate

Charles E. Bernasconi, July 29, 1989
Corrinne A. Meza, July 26, 1989
Alvie Withers Whitlock, June 21, 1989

Oil & Gas

Walter R. Delahoussaye, June 25, 1989
William L. Duhon, June 22, 1989
Werner M. Garlington, June 24, 1989
Oscar H. Morgan, July 18, 1989
Thomas J. Page, June 1, 1989
Silvy J. Valensuela, August 2, 1989
Hewlett N. Williams, July 11, 1989

International Oil & Gas

Charles S. Martin, July 8, 1989

Refining & Marketing

Dewey A. Booth, June 20, 1989
Marion Price Chalker, July 5, 1989
Charles V. Conner, August 4, 1989
Frank Nelson Drake, July 26, 1989
William H. Dunaway, July 23, 1989
Errol E. Emerson, July 30, 1989
Francis Bowen Fisher, July 13, 1989
John J. Gallie, July 20, 1989
Ralph Goss, June 18, 1989
Edward L. Haslett, July 28, 1989
Gilbert C. Hittesdorf, May 11, 1989
Anna M. Jason, July 13, 1989
Arnold W. Johnson, May 26, 1989
Arthur L. Johnson, July 8, 1989
Leonard N. King, August 14, 1989
Ernest Sheldon Kirby, July 12, 1989
Arthur Kull, July 21, 1989
Wade H. Liverman, August 9, 1989
Elmer E. Loving, May 21, 1989
Robert A. Mackay, August 21, 1989
Joseph C. Nagel, July 29, 1989
Viola Olsen, June 18, 1989
William Patrick, July 23, 1989
Ray L. Patton, August 5, 1989
William Boyce Perdue, June 4, 1989
William H. Posey, June 13, 1989
Rupert C. Rose, July 20, 1989
Josephine E. Savage, August 14, 1989
William L. Winschell, June 5, 1989
R.C. Wright, July 19, 1989

Chemicals

Bennie C. Watts, July 19, 1989
Andrew Zsitvay, July 13, 1989

Molycorp, Inc.

Larry E. Ling, June 8, 1989
Tabitha Allman Phillips, May 14, 1989
Royal E. Rennert, June 12, 1989

GARY L FOY
16823 LIGGETT STREET
SEPULVEDA CA 91343

CONTENTS

**Approaching Our Centennial** Page 1

The year 1990 will mark Unocal's 100th anniversary as an independent energy resources company. *Seventy Six* will help celebrate our centennial with special features and two extra issues.

A New Lease On Life Page 2

Unocal's Lisbon field in remote southeastern Utah has produced oil for more than 28 years. Now the company is about to begin a new endeavor here: the production and sale of helium.

On The Rocks Page 8

Advanced computers and satellite imaging have made the search for oil more high-tech than ever. But the hunt also involves more elemental methods. Come along as *Seventy Six* joins a pair of geologists in the field.

Preserving An Old-Timer Page 14

A vintage pipeline steam pump that helped move Unocal crude for 76 years has found a permanent home.

Serving Customers Page 18**For The Long Haul**

By identifying the specialized needs of truck fleet owners and their drivers, Unocal is expanding its leadership role in the truckstop business.

A Guiding Hand Page 24

The R.M. Pyles Boys Camp shows troubled youths a better way.

Celebrating Giving Page 30

Unocal helped get the 1989-90 United Way campaign under way by hosting a street fair in Los Angeles. The event featured dining, dancing, drawings — and dunkings.

A Team Effort Page 34

A little teamwork goes a long way in the household of Unocal employee Joe Chang — the father, coach and manager of tennis prodigy Michael Chang.

Service Awards Page 38

30

Cover: Under a broiling sun, two Unocal geologists make their way up a canyon wall in Utah. Despite dizzying advances in oil-hunting technology, explorationists still need to get out on the rocks. Story on page 8. *Photo by Tim Smight.*

Seventy Six is published by the CORPORATE COMMUNICATIONS DEPARTMENT, Unocal Corporation, Box 7600, Los Angeles, California 90051. **Karen Sikkema**, Vice President, Corporate Communications; **Tim Smight**, Editor; **Cathy Stephens**, Assistant Editor; **Heidi Siegmund**, Editorial Assistant; **Ray Engle and Associates**, Art Directors.

Seventy Six

VOL. LXVIII
NUMBER 4
FALL 1989

Use of the name "Unocal" in Seventy Six may refer to either "Unocal Corporation" (a Delaware corporation) or "Union Oil Company of California" (its wholly owned subsidiary) or, at times, to subsidiaries of either of these companies.