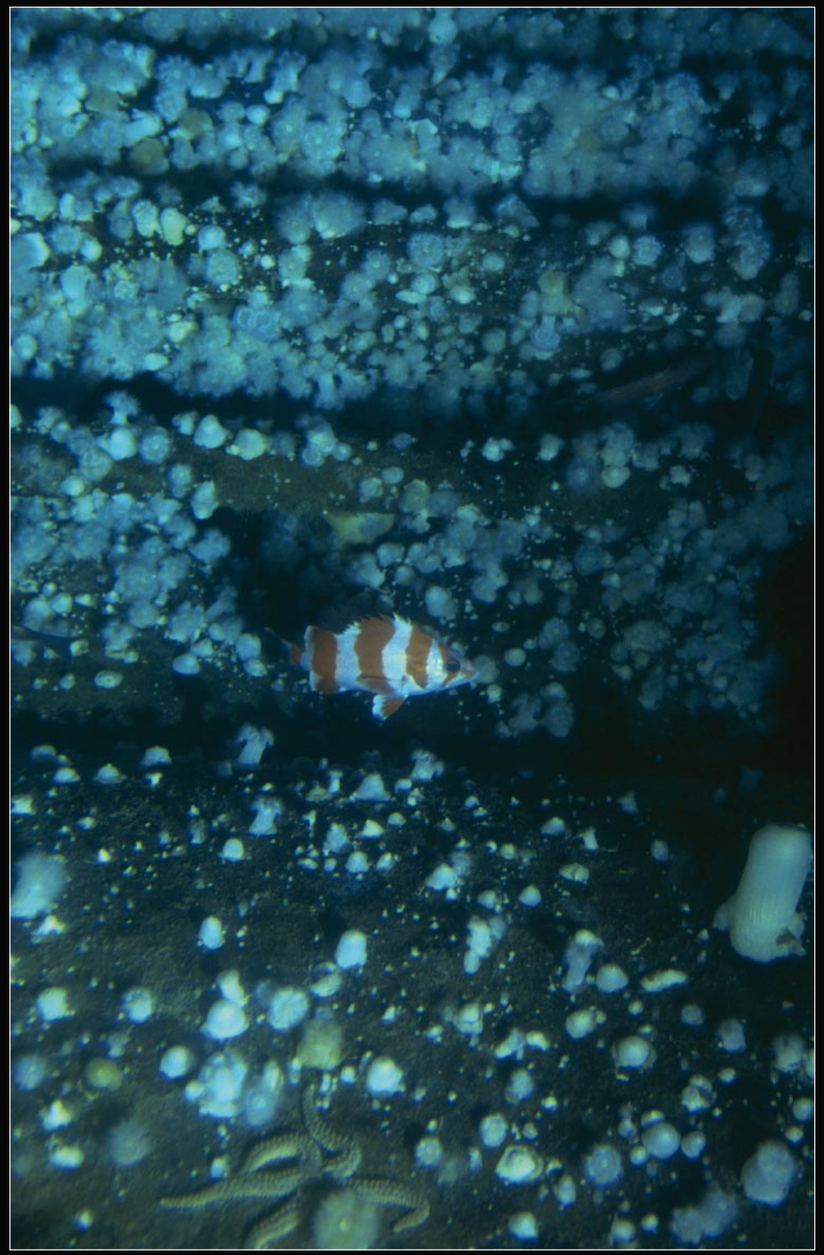

Chapter 2

A BRIEF HISTORY OF OIL DEVELOPMENT IN SOUTHERN CALIFORNIA

Milton S. Love

Oil and gas seeps, often the result of geological deformation of the oil-saturated strata, are a common global occurrence. The famous La Brea tarpits, found near downtown Los Angeles, is just one of many seeps found in California. Offshore, seeps are visible on the ocean surface as oil slicks or gas bubbles. As noted by California Resources Agency (1971), "Some [seeps] remain dormant for extended periods of time and then become reactivated, probably by pressure buildup or earth movement. Because of the transient nature of many seeps, an accurate count is difficult to obtain; however, it appears that there are probably 50 to 60 seeps and seep areas on the ocean floor between Point Conception in Santa Barbara County and Huntington Beach in Orange County."

Native Americans in many parts of California, but particularly along the southern California coast, mined those land seeps that contained hard, high-grade asphaltum. The soft tar derived from offshore seeps and diverted to beaches was rarely, if ever, used. California Native Americans used asphaltum in a variety of ways. Baskets and water bottles were made watertight, arrowpoints and hook barbs attached to shafts, broken stone vessels repaired, canoes caulked and sealed and shell decorations were inlaid on various objects. The Chumash of coastal southern California melted asphaltum and mixed it with pine resin to create an effective adhesive for many of these uses.

Early European explorers noted the presence of these seeps. "The Spanish explorer Fages, in 1775, said that 'At a distance of two leagues from this mission [San Luis Obispo] there are as many as eight springs of a bitumen or thick black resin…' Fr. Pedro Font, in 1776, while near Goleta in Santa Barbara County wrote '…much tar which the sea throws up is found on the shores, sticking to the stones and dry. Little balls of fresh tar are also found. Perhaps there are springs of it which flow out into the sea, because yesterday on the way the odor of it was perceptible, and today…the scent was as strong as that perceived in a ship or in a store of tarred ship tackle and rope" (Heizer 1943).

While European settlers in California also utilized asphalt from terrestrial seeps in limited ways, primarily for water proofing and lubrication, there was relatively little interest in oil seeps until about 1850, when it became more widely known that kerosene, an excellent substitute for whale oil in lamps, could be distilled from crude oil. While Dr. Abraham Gesner, a Canadian geologist, is officially credited with inventing this process in 1849, others may also have stumbled onto this idea. In California, the first person known to use partially refined oil for illumination was General Andreas Pico, the brother of Pio Pico, the last Mexican governor of California. In 1850, General Pico distilled kerosene from oil taken from hand dug pits in Pico Canyon (near Newhall, southern California) and used it for lighting a home. By 1854, miners had excavated into Sulphur Mountain in Ventura County (southern California), were hauling out the oil that seeped into their tunnels and had set up stills to produce kerosene. Throughout the 1850 and 1860s, various companies mined seeps for petroleum and produced kerosene or kerosene-like products.

In California, the first well (as opposed to hand-dug pit) that was designed to produce oil was a failure. It was drilled in Humboldt County in 1861 and it, along with others in the same county between 1861 and 1864, came up dry. However, the first productive well, drilled in 1865, came in from this county. This was quickly followed up by successful wells in Ventura and other localities. It was not until 1876 that the first truly commercial well was developed in Pico Canyon, the site of General Pico's first pit mine. The next 20 years saw production rapidly escalate, with new fields explored and developed in a number of locations in central and southern California.

The first oil production from submarine strata in California occurred in Summerland, a sleepy village south of Santa Barbara formally founded in 1889 as a spiritualist colony. For years, Summerland residents had noted both the heavy scent of oil that frequently hung over the community and the numerous seeps that dotted their coastline. In fact, natural gas was so plentiful that when boys wanted to play baseball at night "…they would drive short pieces of pipe into the ground about four or five inches, and would light them, and there would be a gas flame at least a foot high from the top of the pipe. Fifteen or twenty of these pipes along the edge of the road gave plenty of light for them to play after dark. When they got called in to go to bed, each had a flat board, and they would whack the board down over the flame, and out it would go." (Lambert 1975).

In the late 1880s and early 1890s, several Summer-

Opposite: Flag rockfish at Platform Harvest. (Photograph by Donna Schroeder)

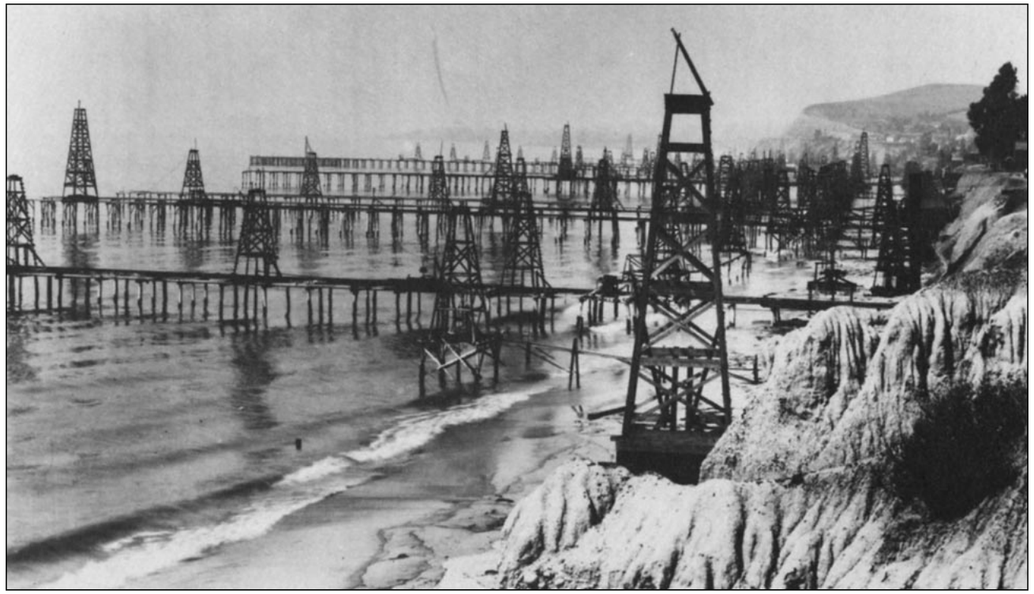

Figure 2.1. Oil piers off Summerland, California, about 1904 (from Rintoul 1990).

land residents had struck oil while digging water wells and at least one would fill barrels from a bucket, haul them by buckboard to Santa Barbara, and sell the oil to laundries. Drilling for oil just back from the ocean commenced shortly after and by 1897 both the beaches and short stretch between ocean and coastal hills were blanketed with drilling rigs. In 1896, W. L. Watts of the California State Mining Bureau reported that "It is also evident that the oil yielding formations extend south into the ocean…At low tide, springs of oil and gas are uncovered on the seashore." (Rintoul 1990).

True to the prediction, the first pier holding a well was built in 1897. This was perhaps the world's first well brought in over water, a record also reportedly claimed for the Baki (formerly Baku) (Republic of Azerbaijan) oil fields in the Caspian Sea and by Pennsylvania for drilling into Lake Erie. Within a few years there were 11 piers (harboring over 200 wells), one of them stretching 1,230 feet offshore (Figure 2.1). The Summerland piers continued to produce oil until 1939, when the last well was destroyed by high tides and high surf.

In the 1920s, a series of discoveries along the Santa Barbara Channel, particularly at Rincon (northwest of Ventura) and Ellwood and Capitan (west of Santa Barbara) led to additional offshore drilling. While all of these discoveries were made on land, development quickly extended onto piers. However, rather than being built of wood, these piers were more heavily constructed of steel pilings and reinforced concrete caissons.

The year 1932 saw the erection of the first oil platform off California and perhaps in the world. In that Depression year, the Indian Petroleum Company was faced with a dilemma. Geological evidence implied that productive oil-bearing strata lay offshore of Rincon (just northwest of Ventura). However, the costs of building a pier out to that formation were prohibitive. The company solved the problem by building part of a pier, located about 1,200 feet beyond the end of the nearest pier. Constructed of steel in 38 feet of water, the aptly named "Steel Island" was eventually home to three wells (Figure 2.2). It lasted until 1 January 1940, when "…mountainous waves battered the platform. The structure went down. There was no loss of life, but equipment was destroyed and wells damaged. Rohl-Connolly Company, marine contractors, removed equipment, derrick and steel pilings from the ocean floor; cut off casing at the floor of the ocean; and placed 6-foot cement plugs in the tops of the water strings" (Rintoul 1990).

Later oil and gas discoveries that were of importance to offshore development included those at Huntington Beach, Wilmington and Seal Beach. However, it was not until 1954, that the next step in offshore production oc-

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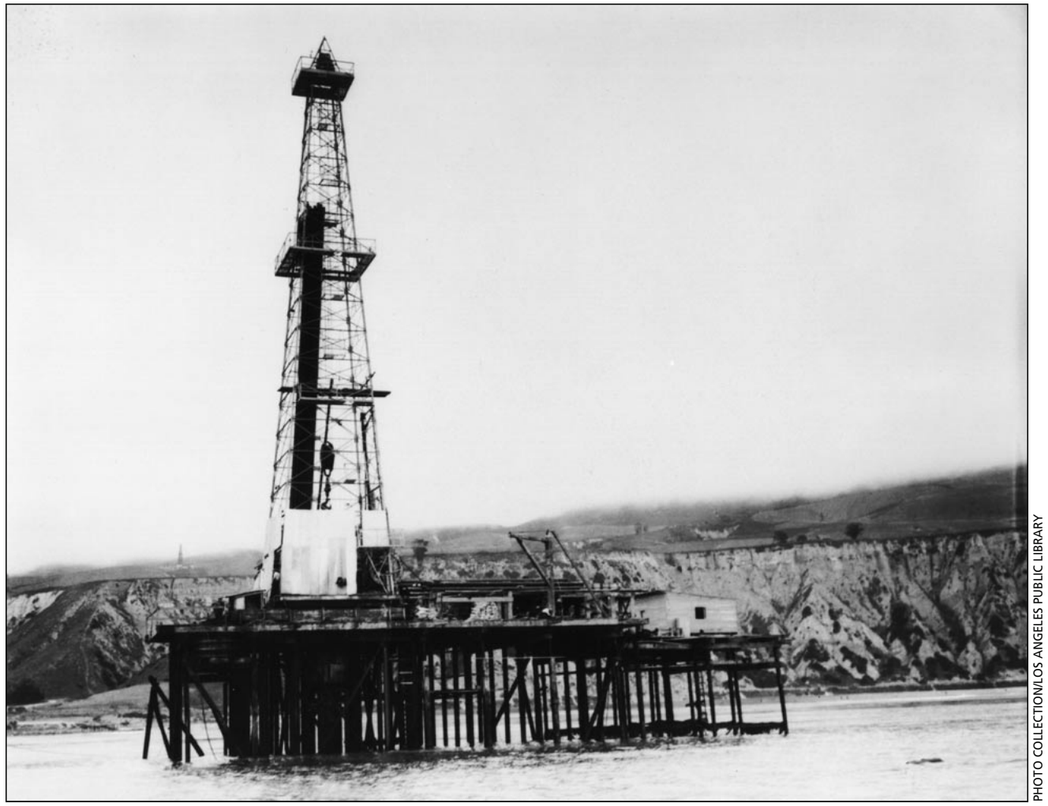

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Figure 2.2. Built off Rincon, southern California, in 1932, the "Steel Island" was one of the first oil platforms in the world.

curred with the creation of the first man-made drilling island, "Monterey", situated 1.5 miles offshore of Seal Beach in 42 feet of water. Construction on the island commenced in 1952, but a lawsuit by the city of Seal Beach prevented drilling until 1954. The circular island "…75 feet in diameter, had an outer rim formed of interlocking sheet-steel piling driven into the ocean floor to depths of 15 to 20 feet. The interior was filled with rock and sand barged in from Catalina Island" (Rintoul 1990). In succeeding years five other oil islands (Grissom, White, Freeman, Chaffee, and Esther) were built.

Oil islands were only practical in relatively shallow waters and when industry-led seismic surveys and bottom coring discovered potential fields in deeper offshore waters, the stage was set for the development of oil platforms. In June 1958, the California State Lands Commission held its first sale of tidelands leases, ending a freeze that had held up offshore drilling on new sites. The first platform constructed was Platform Hazel, located about two miles offshore of Summerland in 100 feet of water. As noted in Rintoul (1990) regarding Hazel's construction, "In that same month, Standard [Oil] towed an imposing tower a distance of 210 miles… to the Summerland tract. The tower was 75 feet square and 170 feet high. It was a major component of Platform Hazel and was to serve as the foundation on which the 110-foot square deck would be mounted…The tower was floated to the job site on the four big caissons that formed the bottom portion of the tower's legs, each 40 feet high and 27 feet in diameter. Each caisson was pressurized to prevent leakage and also ballasted with 90 tons of sand for stability…Once on bottom, the caissons were sunk 22 feet into the ocean floor by means of high pressure water and air jets that literally hosed away the bottom sands, allowing the caissons to rest on hard ground. The final anchoring was accomplished by filling the caissons with 6,000 tons of sand

and concrete…The cost of building and installing the platform was $4 million." In September 1958, Standard Oil began drilling from the newly constructed platform and within one month the first well, bottoming out at 7,531 feet began producing 865 barrels per day. This was followed two years later by the construction of nearby Platform Hilda.

In subsequent years, a number of platforms were installed in both state and (beginning in 1967 with Platform Hogan) federal waters in southern California. However, expansion of offshore oil drilling came to an abrupt halt in 1969, with the disastrous blowout and subsequent oil spill at Platform A (installed in 1968) in the Santa Barbara Channel. And while discussion of both opposition and support for oil development are beyond the scope of this report (see Beamish et al. 1998, Nevarez et al. 1998, and Paulsen et al. 1998 for more information), it is safe to say that the subsequent environmental concerns about the safety of offshore oil exploration, development, and production delayed further drilling for a number of years. It was not until the late 1970s that installation of new platforms resumed. No new platforms have been erected since 1989 (Nevarez et al. 1998).

How do platforms get their names?

On the Pacific Coast, platform names have to conform to a set of rules promulgated by the U. S. Coast Guard. The Coast Guard created a series of zones ("15-minute quadrangles") along the Pacific Coast beginning at the U. S. – Mexican border. The names of all platforms in a zone must begin with the same letter. Platforms in the first zone, off San Diego, would begin with "A". The southern-most platforms (Emmy, Edith etc.) lie off Long Beach, in the "E" zone.

Industry personnel imply that the choice of names have often been made in a disarmingly casual way. For instance, the project engineer for Hermosa apparently named that structure after the elementary school attended by his daughter. Ellen and Elly are said to honor the wives of the engineers in charge of those platforms' construction. Hondo, meaning "big" in Spanish, was so christened because at the time it was the tallest (measured from the seafloor) of the California platforms. One story has it that, because a nearby platform was later installed to tap the same reservoir as Hondo, it was named Harmony. Hogan and Houchin were the surnames of two presidents of Phillips Petroleum.

Why do Platforms A, B and C, despite their locations in the H zone, not have "H" names? These were installed in the days before the Coast Guard regulations were mandatory.

LINDA SNOOK

Stripetail rockfish on shell mound of Platform Gail.