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JEFFERY M. DORWART

POINT BARROW, ALASKA, PETROLEUM RESERVE, 1923–1953

Point Barrow (70°21′N. to 67°50′N., 161°46′W., to 156°00′W.) lies at the northwestern tip of Alaska. A 1923 executive order granted the 44,200 square-mile region to the Navy, which immediately established the Office of Naval Petroleum and Oil Shale Reserve, with its base camp for exploration at Point Barrow. Not used as a naval base as such, Point Barrow's oil potential grew increasingly important as World War II continued. After initial surveys, the Navy's Seabees arrived in August 1944 for petroleum exploration. Two regions—Simpson and Umiat—promised an abundance of oil. At the war's end civilian contractors replaced the Seabees and continued exploration until 1953.

In 1947 the Naval Arctic Research Laboratory began operating at Point Barrow. Until its decommissioning in June 1981, the NARL provided facilities and services for research that strengthened naval capabilities in Arctic regions.

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SUSAN H. GODSON

POINT MUGU, CALIF., NAVAL MISSILE CENTER, 1946–

Shortly after World War II, the Navy decided to concentrate on the West Coast all Bureau of Aeronautics activities in the field of pilotless aircraft. By December 1945 the new Pilotless Aircraft Unit was a going concern with a large detachment transferred from the Pilotless Aircraft Unit at MCAS Mojave (q.v.) and Naval Air Facility, Point Mugu, under command of Capt. A. Scoles, USN. With great assistance from Seabees from Port Hueneme (q.v.), an efficient base was rapidly built at a site at the southern tip of the mouth of the Santa Clara River about fifty-five miles north of metropolitan Los Angeles. Favorable locations for many observation posts were available on a string of islands along the 100-mile overwater range; it soon was proved that trajectories of 100 or more miles could be closely observed and plotted from the Santa Barbara Channel Islands. Plans called for a complement of 176 officers, 764 enlisted men, and about 1,000 civilian employees to be filled by 1948. By that time the overwater test range had been renamed the Naval Air Missile Test Center and its function had been expanded far beyond its original mission, to test the *Loon*—the former V-1. Its mission now would be to evolve both efficient defensive and offensive guided missiles and the necessary instrumentation and controls in order to obtain maximum engineering or tactical data after the inevitable crash of a missile. Involved would be both internal and external instrumentation. Internal instrumentation gives a time history of the missile's roll, yaw, and pitch and its altitude, airspeed, angle of attack, and position with respect to a target. External instrumentation systems include visual tracking photo-theodolites, high-speed cameras to record critical portions of the flight, and chain radars for nonvisual long-range tracking. Some missiles can be launched in a horizontal or slightly inclined plane while others require a vertical or nearly vertical launching attitude. Similarly, some missiles obtain their thrust by interior force, others by exterior forces such as catapults, Jet Assisted Take Off (JATO), or auxiliary motors. One of the first devices to come from Point Mugu was a slotted cylinder catapult with multiple-firing powder chambers that could be used on land or on ships, with a model placed in a CVE in 1947. Various models of target drones were also developed, some being pilotless aircraft powered by jet or other engines. These can be radio-controlled from ground stations or a mother plane.

Point Mugu is one of only four important test ranges in the United States with an overwater range. Its Pacific Missile Range, authorized in 1957, was extended in January 1959 to 250 nautical miles for the testing of *Sparrow III*, and then to 1,500 miles for the testing of other advanced missiles and fleet training. Thus tests of Intermediate Range Ballistic Missiles and of Intercontinental Ballistic

Missiles could be conducted from the coast out to the vicinity of the islands of Midway, Wake, and Eniwetok. If necessary, the range could be extended to 10,000 miles, which called for the use of twelve instrumented range ships and the expenditure of $4 billion during the next decade.

There was soon also developed a polar orbit launching capability and advanced equatorial orbit launching facility with corresponding satellite recovery areas.

The first step in the development of the Naval Missile Facility occurred at Point Arguello, which is advantageously located for security purposes on a 20,000-acre site that was once the Army's Camp Cook. However, nearly all the major flights would take place at the 70,000-acre site of the Strategic Air Command's Vandenberg Air Force Base.

The Naval Air Station at Point Mugu is subordinate to the Missile Center and at the same time supplies administrative services in support of the Range headquarters. Yet the tempo of its operations may be gauged by the fact that it is an arrival and departure point for flights to Spain, Puerto Rico, Cuba, Diego Garcia Island, Guam, Okinawa, Japan, New Zealand, and Antarctica. In 1974, 50,714 passengers passed through, 5,210 flights were cleared, and more than 3 million pounds of cargo were despatched. By 1973 an Instrument Flight Room (IFR) had been provided. In a 700-foot-square room beneath the control tower, in complete darkness, men working in the Radar Approval Control Facility can give aircraft pilots twenty-four-hour approach control service rather than only the eight-hour service provided by a Ground Control Approach unit installed in 1954.

The year 1966 marked several firsts for Point Mugu: the first recovery of a space-orbiting vehicle; the first recovery of a ballistic trajectory nose cone; the first satellite launch from Point Arguello; and the first firing of *Hydra*, the Navy's method of positioning heavy boosters at sea for the launch of payloads. In 1960, also, the Pacific Missile Range became one of the two readout stations for the National Aeronautics and Space Administration's (NASA) *Tiros II* weather satellite; took over operational control of the tracking stations for the Navy's navigational satellite, *Transit*; and pushed construction of three ground stations to support NASA's *Mercury* program. With $15 million spent in construction in 1960 at Point Mugu, Hawaii, Eniwetok, Midway, and Wake Islands, the range was able to conduct 1,900 launched operations and 2,890 support operations and to increase the number of its range ships from four to seven.

A significant development at Point Mugu is the Life Sciences Department of the Naval Missile center. It is divided into three divisions—Bio-Engineering, Bio-Medical, and Bio-Environmental—with the last conducting experiments with animals and men to establish tolerance limits, selection criteria, protective measures, and training programs in multiple stress environments. Construction also included a 100-foot radius centrifuge for testing space capsules and missiles. With all these projects under way, Point Mugu in 1960 was staffed by 3,900 military and 3,500 civil service personnel as well as 1,600 contractual personnel. Completed in 1964 at a cost of $1.5 million was a simultation laboratory capable

of simulating all parts of weapons systems by means of electronic analog computers and also useful in vectoring missile-carrying aircraft into correct positions for launching missiles against airborne targets.

The mission of the Pacific Missile Range, as stated by the Secretary of the Navy, is "to provide range support for the Department of Defense and other designated government agencies for launching, tracking and collecting data in guided missile, satellite, and space vehicle research, development evaluation, training programs, and actual operations." To accomplish this mission the following facilities undertake the tasks indicated: PMR Headquarters, Point Mugu, coordinates all operations and launches target drones and weather rockets; Naval Missile Facility, Point Arguello, is the prime launching area for big boosters; San Nicholas Island is the tracking site, home for readout antennas, and landing field for recovering drones; Kaneohe, Hawaii, is the central operational station for PMR operations in the Pacific; Kokee Park is a tracking station; Barking Sands is a satellite tracking station and recovery area for drone operations; and South Point is a deep space probe tracking station. In the Western Pacific, Missile Impact Location Stations are located at Eniwetok, Wake, and Midway, while *Mercury* and *Discover* tracking stations were located at Canton Island and Tern Island, respectively. At the end of the 1964 Secretary of Defense Robert McNamara converted the Point Mugu PMR to a contractor operation.

In April 1974 the first test of the Navy's *Harpoon* occurred from Point Mugu. Fired from a P3–A *Orion*, it scored a direct hit on a remote-controlled target boat. While tanks, bridges, and other targets on San Nicholas Island are used, most popular are seaborne powered targets, such as Mark 35 Seapowered Targets (SEPTAR) boats, with old Destroyers (DDs) and Destroyer Escorts (DEs) as medium-sized targets.

The Acoustic Chamber at Point Mugu is capable of providing a level of 156 decibels, enough to actually burn a person's skin. Ten feet high and containing several 15.5–by–12.5–foot chambers, it provides a testing environment for determining the life span and critical failure points of the components in such missiles as *Sparrow*, *Sidewinder*, *Harpoon*, and *Phoenix*.

Point Mugu in 1977 became home base for a newly commissioned HAL-5, or attack helicopter squadron, whose mission is to provide close air support to such units as Special Warfare Group ONE, SEALS, UDT, and Coastal Riverine Forces.

Also under test at Point Mugu has been the *Aegis* system, with live firings carried on at the Test Center range and also aboard the research and experimental ship *Norton Sound*. All told, about 10,000 tests are conducted annually at Point Mugu.

Controversy during the early 1980s over the best basing mode for the MX has led some naval men to suggest that launching missiles from the sea is safest for the men and vehicles involved. The ships will survive while landbased launchpads disappear into nuclear clouds. These protagonists recall Project Hydra, begun at Point Mugu NMC in January 1960 and continued through January

1965. The project involved launching missiles from vertical floating launchers dropped into the water either by warships or a special Hydra launching surface effects ship. The feasibility of the project was proven, and such firing is easily adaptable for use by both merchant and combatant warships.

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PORT ALTHORP, ALASKA, NAVAL AUXILIARY AIR FACILITY, 1941–1944

Port Althorp (58°08′N., 136°20′W.), is on Chichagof Island, seventy-two miles northwest of Sitka. Part of the prewar expansion of the Sitka subsector, Point Althorp became a section base in July 1941, then an auxiliary air facility in March 1943. Used for local patrol, the base could beach a few seaplanes and handle minor repairs to aircraft and small vessels. No longer necessary as Alaskan operations centered on the Aleutians, Port Althorp was disestablished in June 1944.

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PORT ARMSTRONG, ALASKA, NAVAL AUXILIARY AIR FACILITY, 1941–1943

Port Armstrong (56°08′N., 134°39′W.), on Baranof Island, lies fifty miles southeast of Sitka. Like Port Althorp, it became a naval section base in the Sitka subsector in July 1941, then an auxiliary air facility in March 1943. Port Armstrong had a landlocked inner basin and the best anchorage in the area. Small craft and patrol planes could get minor repairs there. The base was decommissioned in July 1943.

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PORT HUENEME, CALIF., NAVAL CONSTRUCTION BATTALION CENTER, 1942–

Port Hueneme, Calif., is a deep-water port fifty-five miles northwest of Los Angeles at the edge of the Oxnard Plain. The seaport itself originated in 1871, when Thomas Bard, owner of most of the land in the area and a future U.S. Senator from California, built a 1,000-foot-long wharf and began importing lumber and exporting grain. In 1874 the federal government built a lighthouse at Port Hueneme on land donated by Bard, but the first real naval installation there was a radio direction finder station built in 1920 and abandoned as obsolete in 1931. In 1938 Richard Bard, a son of Thomas, in association with local businessmen and farmers, organized a harbor district and raised public funds for the building of a modern seaport at Port Hueneme. The last was completed on 318.59 acres in June 1940. Soon thereafter Rear Adm. Ben Moreel, Chief of the Bureau of Yards and Docks, created the Naval Construction Corps and was soon seeking a West Coast port to serve it during World War II. After survey teams inspected various sites, the Navy decided upon Port Hueneme, which it acquired in February 1942 for $2 million and to which it added 1,273 acres of privately owned land. Construction began on 9 March 1942 by the firm of Atkinson and Pollock, and Capt. Louis F. Thibault, USN, was recalled from retirement to oversee the base's construction and establishment. The Advanced Base Depot (ABD) was officially established on 15 May 1942. Until the end of the war the private contractors, Pacific Naval Air Bases, administered the base on a cost-plus-fixed-fee contract that cost the Navy more than $1 million per working day. By 1945 the base contained thirty-three miles of railroad lines and sidings with a capacity of 1,997 boxcars; sixty-five miles of paved roads; tent cities, barracks, and messing facilities for 21,000 military personnel; a complex of warehouses; and an expanded inner harbor that could handle nine cargo vessels and two tank landing craft simultaneously. About 20 million measurement tons of supplies and equipment were shipped out during the war, four times as much by ships as by rail because of the need to deliver them to fighting men in the Central, South, Southwest, and North Pacific.

The ABD at Port Hueneme originally served as a receiving barracks for