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UNITED STATES NAVY AND MARINE CORPS BASES, DOMESTIC

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cluding the use of barrage balloons. Starting in January 1942, however, squadron VS-1D11 (later VS-46) operated an offshore patrol until 1 January 1944. It first used OS2Us, then SO3C-2s, and finally SBD-5s. VS-46 departed the station on 22 April 1944. Another squadron, VS-52, comprised of ten SBD-4s, had served a similar function between August and December 1943.

Meanwhile NAS San Pedro on 1 October 1941 had been directed to serve as an Aircraft Delivery Depot for new production of aircraft manufactured in the Los Angeles area. Planes coming from Douglas, Lockheed, and Vultee were to be "completely equipped and ready in every respect," which meant that the station had to install their arms and communications equipment, perform engine checks, inspect everything, service them, flight test them, and then provide up to 200 pilots a month to ferry them to other naval activities during 1942. Up to 625 pilots a month were provided in 1943. The drop in 1944 was notable—from 440 in January to 60 in November—but 118 aircraft per month were still delivered. However, in August 1944 the major work of the Aircraft Commissioning Unit was to be devoted to modification of various types of naval aircraft including PBV-5s, PBV-5As, SB2Cs, and some TD2Cs. Some SO3Cs coming from Santa Ana NAS (LTA) (q.v.) were included. In December 1944 the heaviest workload came from PV-2s.

NAS San Pedro in addition provided naval air transportation services. Beginning in June 1942 its Naval Air Transport Service (NATS) provided triweekly flights to Corpus Christi, Tex. (q.v.), and Seattle, Wash. (q.v.), with VR-2, and after January 1943 instituted transcontinental flights from Oakland with VR-3. With the Oakland unit transferred to the San Pedro station in December 1943, NATS to the end of 1944 also connected with Chicago, Washington, New York, and Miami. For the last three years of the war, thus, San Pedro was the base for all NATS flights in the Los Angeles area.

Another function of NAS San Pedro was to load aircraft on ships that would take them to San Diego (q.v.) and Alameda (q.v.). Ships included small carriers, tankers, and ships provided by the War Shipping Administration. With the Aerial Free Gunnery Training Unit established in December 1942, the demands on the station by the end of the war were such that it could continue its rate of service only by acquiring more land.

After July 1944 NAS San Pedro continued to develop its physical plant in the interest of efficient operations without calling for new construction or additional funds. It had on board in 1944 for training purposes aircraft including JM-1s, SO3Cs, JRBs, TBM-3s and TBM-3Es. It loaded ninety aircraft onto ships in July 1945, and eighty-six in August while also operating various utility squadrons, which in part served for search and rescue, and continued to operate the seaplane anchorage. In January 1945 it took over the function, through its Assembly and Repair Department, of preserving aircraft until they could be loaded on ships traveling throughout the Pacific Ocean. The largest number of planes shipped out between January and June 1945 were PV-2s, with each provided with radio, radar, and special electronic equipment. Between January and June

1945 it also preserved and shipped 426 aircraft of various other types, mostly fighters such as FM-2s, F6F-5s, F6F-5Ns, and F4U-1s.

Following the end of the war, NAS San Pedro was allotted more than \$500,000 for new construction while it still delivered aircraft and repaired and serviced fleet aircraft. Then, however, the severe effects of demobilization were felt, and on 6 September 1945 the first of a series of Aviation Planning Directives that determined the postwar status of the aviation facilities in the Eleventh Naval District was received. In consequence of these directives, a "roll-up" program was initiated that disestablished a number of outlying fields, auxiliary air stations, naval air facilities, and Marine Corps air stations, including the one at San Pedro, with the War Assets Administration assuming custody and accountability for it on 15 January 1947. NAS, Terminal Island, San Pedro was placed in reduced operational status, but when it was inspected by the staff of the Commandant, Eleventh Naval District, on 18 November it was found to be "good to very good." Nevertheless, in the spring of 1947 orders were received to reduce operations because the station might be disestablished by 1 July even though it was on property for which a lease ran to 1970. The station was put in caretaker status effective 1 May 1947 and directed to prepare for disestablishment on 1 July 1947, when its real property was turned over to the Bureau of Yards and Docks.

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SAN PEDRO, TERMINAL ISLAND, CALIF., NAVAL OPERATING BASE, 1846, 1917-1947

The first time the United States developed a base at San Pedro, Calif., was during the Mexican War. On 6 August 1846 Commo. Robert F. Stockton in the frigate *Congress* put ashore the vessel's Marines under First Lt. Jacob Zeilin. They seized San Pedro, and on 11 August a mixed body of sailors and Marines marched from there to capture Los Angeles. In September the Los Angeles garrison took refuge on a merchant vessel in the harbor after being expelled by California insurgents. On 7-8 October an expedition commanded by Capt. William Mervine, USN, and based at San Pedro failed in an attempt to retake the City of the Angels. When Commodore Stockton arrived in late October he concluded that the poorly protected roadstead was too dangerous for his vessels and shifted his base to San Diego (q.v.).

The most difficult facility to obtain information about is the submarine base at San Pedro. From 1919 to 1922, apparently, there was a submarine base located on Pier 1, Outer Harbor, Long Beach. It was an outgrowth of a Reserve Force

Naval Training Station established in 1917 with a thousand men, of which the submarine base had 525 officers and men in 1918. The Rear Adm. Arthur J. Helms Board on the Shore Establishment reported early in 1917 that San Pedro was one of three sites it recommended for a submarine base; the City of Los Angeles donated some land for such use; and a special board recommended the spending of \$5 million to erect a submarine facility. However, the only result was that in 1920 and 1921 some 1,340 men at a submarine base overhauled H and I type boats. The last mention of submarines at San Pedro was made in 1929, when the base had already become specialized in the servicing of auxiliary ships. Meanwhile, in 1922 this facility was used as a destroyer base.

Based on a survey of overall requirements, in the fall of 1938 the Chief of the Bureau of Yards and Docks prepared a comprehensive plan for the improvement of the naval shore establishment. The cost to implement the plan, issued on 1 January 1939, was \$330 million. During fiscal years 1939 and 1940, Congress appropriated \$116 million toward the program, of which \$19,750,000 was earmarked for the acquisition and initial development of facilities at Terminal Island in San Pedro Bay.

The establishment of the Terminal Island Naval Dry Docks was authorized in June 1940; construction began two months later. As completed in 1945, the station was on a flat 380-acre area, half to two-thirds of which had been reclaimed by hydraulic fill during the construction period. The primary construction and repair facilities built at Terminal Island during its development were one large dry dock and two lesser docks. Temporary construction was generally adopted early in the war, but after the station was designated a permanent unit of the shore establishment, new construction was permanent. Because most of the land on the base was of new fill, it was necessary to support all structures on piles.

On 6 January 1941 the Rear Adm. John Greenslade Board to Survey and Report on Adequacies and Future Development of the Naval Shore Establishment reported to the Secretary of the Navy. With respect to the San Pedro-San Diego Home Main Training Area, the report maintained that the area

has an important role as a training center for naval forces, due to favorable water conditions and facilities for recreation for large bodies of men. This area is not considered, however, of paramount importance in its association with the strategic front conceived by the board in the Pacific, except for oil supplies. It serves, however, as a secondary point of departure for lines of communications to the South and West.

Repair facilities, including dry docks for all classes of ship in this area, which the board recommends, increases its efficiency as a training center and represents a needed addition to the West Coast yards and Hawaii in limited repair facilities.

Even if San Pedro would not be a home, or major base, it should be made capable of supporting large portions of the naval forces in training and rest measures and in limited maintenance and supplies. Among other facilities, at what became known as the Fleet Operating Base (Roosevelt Base) the board recommended the building of a twin destroyer dock; docking for one battleship,

second class; three armored cruisers, and a destroyer leader; repair facilities for 9 percent of the fleet at a sustained tempo and for certain emergency repairs; a training base and small craft training facility; and improving its facilities for the repair of commercial ships. In its protected anchorage, San Pedro should be able to service 60 percent of the fleet; in aeronautics, it should be able to support eighty-four patrol squadrons, thirteen support squadrons, seven carrier groups, and twenty-four utility aircraft and to provide major overhaul for them. With respect to supply, it should be able to support 40 percent of the fleet for one month and local forces for three months. In addition its fuel supplies should be able to meet the requirements for 40 percent of the fleet and for local forces for six months. Marine Corps facilities to be provided included a Base Guard Detachment, an aircraft fighter division, two defense battalions, a base depot, and a recruit depot. The receiving ship at the base should be able to handle 500 men. Last, San Pedro should be given a 500-bed hospital.

After the first development was initiated at Terminal Island in 1940, no work of major importance was added until February 1942, when recreation facilities, personnel buildings, and several shop buildings were ordered erected under a supplementary agreement to the original contract. In April 1942 work began on two additional 700-foot dry docks numbered 2 and 3, as well as on a 125-by-615-foot concrete approach pier, a 60-by-600-foot pier, a dry dock service building, a plate shop, and the conversion of a storehouse to a shop building. In 1943 a Marine Barracks was built; a second 125-by-625-foot concrete approach pier was placed under construction; and a 50-ton dry-dock crane was erected. A shipfitters shop, a blacksmith shop, a boiler shop, and five temporary yard service buildings were also begun.

Major increases continued at Terminal Island in 1944. In January work began on the construction of two pontoons 135 feet long, 51 feet wide, and 13 feet deep to be used as a temporary bridge across Long Beach Channel. A second contract was let for the construction of approach ramps for the pontoons which, in the completed bridge, retracted under the approach ramps when the bridge opened and closed from each side of the channel to the center when water traffic had passed. On 11 February 1944 construction began on a 10,000-foot mole-type breakwater. The project consisted of two sand-tight rock and clay dikes 250 feet apart and filled with material dredged from the basin formed by the mole. In March a contract was awarded for the construction of a permanent electrical and optical shop; in July work began on a transportation building; and in September work began on extensions to the two 615-foot concrete piers. The extensions had concrete decks set on precast concrete piling. Each extension was 610 feet long on the original width of 125 feet.

The largest new project initiated in 1945 was the construction of Pier No. 6. This work, begun in January, included a reinforced-concrete pile-supported fireproof pier 1,225 feet long and 150 feet wide, two two-story service buildings on the pier, and a 250-foot-long quay wall. Also in January, construction began on a 200-by-400-foot fireproof storehouse.

Another major construction project undertaken at San Pedro was that of five floating dry docks known as ARDCs. Built in dry basins excavated for the purpose, these self-contained docks were towed to advance bases in the Pacific or to Pearl Harbor, where they were used with great success in the repair of many combat-damaged vessels. Meanwhile, beginning in 1941, \$400,000 was expended for road improvements in the Terminal Island-San Pedro-Oakland area to relieve serious traffic congestion in the neighborhood of the industrial establishments engaged in Navy shipbuilding contracts.

On 27 May 1942 a letter of intent preceded a contract for a large fueling annex to be located at San Pedro. The choice of the site was a happy one because San Pedro is adjacent to one of the major refinery centers in the nation, had a marine terminal facility, and was part of one of the world's greatest ports. The site selected was at the northern end of San Pedro—at 3171 North Gaffey St., to be precise—on 478 acres that were condemned and purchased at a cost of \$214,027.25. Original construction called for twenty 50,000-barrel underground concrete tanks, pumping stations, buildings, and a network of pipelines eventually thirty-one miles long. Negotiations with the City of Los Angeles then resulted in the leasing of two shiploading terminals and Fueling Wharves Nos. 1 and 2, for which the Navy would pay \$60,000 per annum. While Fueling Pier No. 2 was usable, the Navy had to spend \$1.5 million to rebuild No. 1 and for dredging purposes. Fueling Wharves Nos. 2 and 3 were in active use until 1947; the lease on No. 3, however, was terminated on 1 October 1952. Fueling Wharf No. 2, still in use in 1953, had its lease renewed for \$70,000 per annum in 1958.

Although an independent activity, the Naval Fuel Annex was a component of NOB Los Angeles. With only one officer-in-charge, four officers, a fuel foreman, and eighty-five civilian employees, it handled fuel oil, diesel fuel, and aviation gasoline, which it supplied to naval oilers or chartered tankers. In addition, it stocked and issued various petroleum products in drums. A measure of the work accomplished may be gauged by the fact that by May 1943 receipts and issues had totalled more than 950,000 barrels per week. Lacking sufficient storage capacity, contracts were made with oil companies for space for almost 3 million gallons of storage in addition to the million gallons at the annex, and by the end of the war total storage came to 11,039,000 gallons. The peak effort came in May 1945, when the annex issued 11,024,300 barrels of fuels, 777,749 drums of aviation gasoline, and lubricants valued at \$37,821,966. To the end of 1945, the annex loaded 2,372 tankers and filled 4,115 ships' bunkers.

A unique feature of the annex was its security detachment, which patrolled on horseback because there were no roads. Involved were twenty-five aged horses acquired from the Army's Fort MacArthur at San Pedro.

With postwar demands for economy, and reductions in operations the Fuel Oil Annex first became a fuel depot in the Fuel Department of the Naval Supply Depot San Pedro, and in October 1951 merely the Fuel Division of the Operations Department. With the demand for fuel by the Air Force during the Korean War,

however, in 1951 a joint Air Force-Navy arrangement called for the Fuel Division to build six more underground tanks and three 50,000-gallon-capacity aviation fuel tanks above ground. Of the cost of \$2,034,310, the Navy paid \$1,616,210. By August 1953, it was agreed that the Navy would handle all Marine shipments and receipts of jet fuels and 115/145 aviation gasoline for the Air Force on a reimbursable basis. With all this activity, the Navy Fuel Oil activity was re-established under an officer-in-charge with the Naval Supply Depot San Pedro and again a component of Naval Operations Base Los Angeles, but with no change in mission. The Naval Fuel Office (NFO) issued about 2 million barrels of fuel oil and aviation gasoline a month to forty ships and barges at an annual cost of \$55 million in serving all naval and Marine Corps activities in the Eleventh Naval District. Its net worth at the end of 1955 was set at \$10 million. In 1959, with two officers and ninety-three civilians, NFO issued 24,684,741 barrels of fuel to more than 600 ships; the value was set at \$54,588,686. Little change occurred in 1960, but in July 1961 \$2.7 million was supplied to build a half-mile, 16-inch submarine pipeline to Estero Bay Marine Terminal from which pumping stations could serve the NAS at Lemoore (q.v.), sixty-three miles away. The next year, in June, the Norwalk-El Toro Marine Air Corps Station pipeline was modified to provide for the delivery of JP-4 jet fuel to El Toro (q.v.). By the end of 1962, the number of air stations being served increased to eight, including Los Alamitos (q.v.), Point Mugu (q.v.), Litchfield Park, Ariz. (q.v.), Yuma, Ariz. (q.v.), Inyokern/China Lake (q.v.), and Santa Ana (q.v.). With a 3.3 percent reduction in personnel, in 1963 the NFO "throughput" of petroleum products increased by 10 percent, and in 1967-1968, despite a 2 percent decrease in civilian personnel, the throughput increased another 2 percent.

By the end of 1969, with the facility now covering 359.72 acres and using a wharf leased from the City of Los Angeles, it could load or offload two T-2 type oilers simultaneously at a rate of approximately 6,000 barrels per hour. In addition, the facility provided the fuel needs of San Pedro, Twentynine Palms (q.v.), the Army Proving Grounds at Yuma, Ft. Irwin, and Barstow (q.v.). From Estero Bay 220 miles north of San Pedro, which received its fuel by submarine pipelines from tankers, NAS Lemoore was provided with 680,000 barrels of jet fuel in 1968 alone. By October 1969 a new wharf leased from the Los Angeles Harbor Department and dredged to thirty-nine feet could accommodate "jumboized" tankers, Multi Purpose Storehips (AOEs), and Multipurpose Repair Ships (AORs). As one might expect, the station newspaper, first issued in October 1969, was titled *The Pipeline*. By that time the facility was converting to distillate fuel. This meant that impurities were removed from the fuel before it was delivered. Standard fuel issued had caused boiler fireside slagging and corrosion. Distillate fuel postponed the normal boiler cleaning after every 600 hours to 3,700 hours.

In addition to having a small craft training base, San Pedro was provided with a hospital that grew from 500 beds in 1941, when there were 21,000 men on board, to 12,000 beds by 1946. Auxiliary structures included twenty-four ward

buildings, nurses' and WAVES' quarters, and a storehouse. For disciplinary cases, a prison costing \$1.5 million was erected.

While the war called for the building of several huge inland supply depots, San Pedro was to have a supply depot capable of supporting 15 percent of the fleet. The facility was commissioned on 15 December 1942. Meanwhile, in July, an additional municipal warehouse had been leased from the Los Angeles Harbor Commission. In 1945, however, authority was granted to purchase and develop a permanent supply depot to take the place of the leased facilities at the municipal pier. The change recognized that San Pedro would for many years need fleet-supply facilities beyond those at hand. Rather than build additional structures on leased land, it was decided to acquire a section of waterfront property in the San Pedro area for gradual development. A survey of sites resulted in the choice of an area fronting the water to the west and extending from Twenty-second St., in San Pedro, on the north, and the existing fuel-oil docks at berths 37 to 40 on the east, to a point as far south as the breakwater at Cabrillo Beach, approximately 160 acres of tidelands belonging to the Los Angeles Harbor Commission and approximately 22 acres of the Fort MacArthur military reservation. On VJ-Day NSD, San Pedro, had 171,644 square feet of space and a gross total of 1,739,447 feet—yet was the ninth smallest of the ten naval supply depots.

Another facility of NOB San Pedro was that of Port Director, Naval Training Station, headed by Capt. H. W. Underwood, USN (Ret.) from 18 December 1939 to 11 September 1940; Lt. Comdr. G.W.D. Dashiell, USN (Ret), from 11 September 1940 to 20 June 1942; Capt. S. F. Heim, USN, to 21 June 1945; and then by Capt. Dashiell to 1 October 1945. Not part of the services forces, the Port Director worked through the Commandant, Eleventh Naval District, who represented the Naval Transportation Service, itself a division of the Office of Chief of Naval Operations, which served as the overseas shipping agency of the Navy. The Port Director's major duties were to convoy and route ships, issue confidential publications to merchant vessels, assemble cargo, transport troops, berth incoming and sail outgoing ships, service ships, assist Arméd Guard Units, and help to procure ships. From an office located six miles from NOB San Pedro, he sailed ships and convoys from San Pedro during the war years as follows: 1941, seventy-two ships and one convoy; 1942, 2,546 ships and seventy-one convoys; 1943, 2,542 ships and twenty-five convoys; 1944, 3,366 ships and nine convoys; and from 1 January to 1 August 1945, 2,629 ships and one convoy.

If cargo to and personnel at the harbor of Los Angeles remained fairly static from 1941 to 1943, beginning in 1943 the workload increased, and in May decks installed on tankers were loaded with cargoes of airplanes and boats. On 21 May 1943, for example, the *Albert E. Watts* left for an advance base named EPIC (code name for Noumea, New Caledonia) with a deck load of 164 SBDs and one JRF-5. Other cargo loaded included lubrication oil, ammunition from the ammunition depot at Port Hueneme, and lumber. Also sent out were a number of reefer ships. For harbor use, 178 privately owned vessels were acquired to

serve as YPs, AMCs, PYCs, PYs, and IXs in addition to 416 craft obtained from new construction.

In addition to facilities already mentioned, during World War II NOB San Pedro had Air Ferry Squadron 3, a commercial and naval oil tank loading control center, degaussing range and deperming station, disbursing office, dispensary, fleet post office, frontier base, harbor entrance control post, hydrographic office, maintenance office, medical supply storehouse, mine disposal unit, radio station, scrap and salvage yard, section commander, shore patrol, target repair base, San Pedro Naval Air Station (q.v.) aircraft delivery unit, accounting office, barracks, and schools that taught harbor defense, underwater loop and buoy, and cooks and bakers. NOB San Pedro proper contained a branch motion picture exchange, small craft training center, Stark Field, and Allen Center, the last the officers' club. As already noted, it had three dry docks and three floating dry docks, and in addition a net depot, an operating base including a training base and a small craft training center, and a supply depot.

To serve the 7,650 persons at NOB San Pedro during its first year of operation, to March 1943, a cafeteria and the first 400 of 1,000 housing units were built. Late in 1943 a second cafeteria was added. On 25 October 1944, Navy Day, 25,000 visitors came to the base. A recruiting drive began to double the number of yard workers for 1945 to 20,000. By May 15,000 workers were on board. From 25 February 1943 to 24 August 1945, these workers at the dock yards alone docked 406 ships and made 303 major repairs and overhauls. Major ships handled included nine battleships, fourteen heavy and light cruisers, forty-six destroyers, twenty-one DEs, and thirty oilers. The major conversion job was the hospital ship *Hope*, followed by the destroyer tender *Arcadia*.

With the war winding down, NOB San Pedro undertook to develop plans for the postwar years, with its mission to be that of repairing and maintaining naval vessels of all sizes and types but not of engaging in manufacturing for stock purposes. Except for the acquisition of 100 acres to the east to Long Beach Channel, north to the East-West Highway, and south to the ocean, its acreage would remain fixed. While it could handle 26,000 workers, it was expected that 20,000 would be employed and, with the new land, 36,000. Meanwhile it continued to accept new men at its receiving station, and as of 1 December 1945 had on board 9,759 transient personnel, most of these at its demobilization center. During the year it had received 35,680 persons and transferred 34,914, and still had 10,387 at the station. During the year 1945 it had repaired and altered 581 individual items, and had issued general supplies and provisions to many ships, including ammunition from the relatively new ammunition and net depot at Seal Beach, Calif.

Military personnel demobilization at San Pedro following World War II was handled by the Receiving Ship. On 9 September 1946 San Pedro obtained a new tenant, a naval reserve armory, but on 16 November the Naval Station was disestablished, as were the air station and medical supply storehouse on 15 January 1947. As of April 1947, in addition to the Naval Reserve Armory, there

remained on board the Naval Shipyard, Recreation Center, Receiving Barracks, Training Center, Naval Supply Depot, Fuel Depot, Harbor Craft Base, Fire Fighters School, Radio Station, Marine Barracks, Boat Pool, Naval Training School (Electronics), Port Director's Office, Registered Publications Issuing Office, Motion Picture Exchange, and District Accounting Office. Base complement on 1 October 1946 was 2,700, while personnel at the Naval Shipyard included 129 officers, 135 men, and 9,100 civilians. By that time the bulk of the ships assigned for decommissioning was completed, but more ships were still coming from overseas, twenty-nine ships were undergoing deactivation for the Pacific Reserve Fleet (they had no crews on board), and thirty-one ships were undergoing repairs and alterations. The major reductions had been accomplished, but the special problems remained that the reduction in the personnel ceiling had been set without a proportionate decrease in base workload. In addition, an inventory had to be made of all items valued at more than \$50 on hand between 1 January and 1 June 1946.

The ship inactivation program by December 1947 involved the loss of 2,200 people, while the paperwork had to be done for others who shifted from temporary wartime to permanent positions. Yet plans were being drawn for a 30,000-man yard in case another war occurred. Even if the ship inactivation program would be completed by 1 July 1947, a large employee training program had to be instituted for newcomers.

As of 1 April 1947 San Pedro Naval Shipyard had fifteen ships undergoing inactivation, thirty-four active vessels under repair, and four Pacific Fleet Reserve vessels being repaired by a work force of 110 officers, 100 men, and 8,300 civilians, or a loss of 800 civilians during the last half year. On 28 February, meanwhile, Pier 6, begun in January 1945, was completed at a cost of \$3,632,371, and at an additional cost of \$1,443,965 an extension had been constructed to the machine shop. By the end of 1947 the \$5,492,644 Terminal Island Freeway Bridge across Ceritos Channel opened. Two reinforced concrete finger piers started on 25 January 1946 and costing \$2,017,552 were 60 percent completed.

Naval Supply Depot San Pedro in 1947 had 364,288 square feet of covered storage space and 749,847 square feet out in the open. Space leased on Berths and Transit Sheds Nos. 59 and 60 and Pier No. 1, Los Angeles Outer Harbor, cost \$64,800 in annual rent, but a warehouse on the same pier was returned to the owners, thereby saving an annual rent of \$54,000. During that same year the Landing Craft Pool was disestablished, its 1,226 boats being turned over to the Naval Supply Depot. Meanwhile the press of work was so great that the preservation of Pacific Fleet Reserve ships and repair work on fifty-six destroyers and destroyer escorts had to be farmed out to private shipyards. Sales of surplus ships, beginning with the end of the war, still averaged five to six per week.

In 1947 NOB San Pedro had its name changed to Long Beach and came under the administrative command of NOB Los Angeles-Long Beach (q.v.).

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SANTA ANA, CALIF., NAVAL AIR STATION (LTA), 1942-1949

Before World War II the Navy had only two lighter-than-air (LTA) stations, at Lakehurst, N.J. (q.v.), and Moffett Field, Calif. (q.v.). During the war the Navy planned to build eight others whose semirigid craft would be extremely useful for coastal and harbor patrol. One of these stations was at Santa Ana, Calif., about thirty-five miles southeast of Los Angeles. Like the other seven stations built during the war, Santa Ana would have six blimps, later increased to twelve. Of the desirable characteristics of an LTA site—a strategic coastal location, flat land with natural windbreaks, and soil capable of supporting heavy structures—Santa Ana lacked one. It suffered from the so-called Santa Ana winds that occasionally would reach 60 mph. Yet funds for construction were provided in the Second Deficiency Appropriation Bill for 1941, passed 3 July 1941. In addition to the hangars, helium plant, and other facilities, barracks were to be erected to house and mess 456 men.

The timber hangars at Santa Ana consisted of a shell, which was half-egg shaped in cross section, and two end doors.

As already noted, only six months, between 1 April 1942 and its commissioning date of 1 October 1942, were required to build the major facilities at Santa Ana, which included thirty-seven projects. The hangars and the helium facilities cost more than \$11 million. The hangars were the largest clear span wooden buildings then in the world, being 171 feet high (equivalent to an eleven-story building), more than 1,000 feet long, and nearly 300 feet wide at the base. No steel was used in order to save special materials. The doors were hung independently of the hangars. These were supported on railroad rails at the top and bottom. The doors were 120 feet high and folded accordion-like. The site was used twice by Metro-Goldwyn-Mayer, once to make training films for men engaged in LTA, a second time in a film that included the use of blimps.

It was not until 2 September 1943 that a detachment of Blimp Headquarters Squadron 33 was formed to provide maintenance support to Blimp Squadron 31, and not until 1 September 1944 that a utility squadron came on board—only to depart on 15 October 1945. Meanwhile, on 13 September 1945 there was established under the Naval Air Technical Training Command a Target Aircraft Training School, and on 29 November 1945 an Aircraft Storage Department.