MARINE CORPS INSTALLATIONS-WEST

INSTALLATION HISTORIES

I. MARINE CORPS BASE CAMP PENDLETON

During the earliest years of World War II, the U.S. government was looking for a West Coast training base to serve as strategic launching pad for war in the Pacific. Once purchased, the Navy intended to use this land to train 20,000 Marines. Camp Pendleton provided 18 miles of coastline for amphibious training. The land included every type of terrain necessary to perform military exercises: hills, valleys, streams and canyons. The United States government wanted the base ready for occupancy in six months. At its peak, Camp Pendleton would station 60,000 personnel. At the end of the 1930s, the population of Oceanside was 4,651. Over the next decade it exploded to almost 13,000 by 1950 and continued to climb steeply until in 1987 it stood at a remarkable 102,863. The establishment and continued growth of Camp Pendleton, rather than tourism, caused most of the tremendous growth after 1940.

Thousands of workers and their families came to build Camp Pendleton, presenting a strain on housing in Oceanside, and affecting restaurants and businesses. Many of these workers stayed in the city of Oceanside after the completion of the base. Once the base opened, military personnel again crowded the City. Merchants responded by increasing their products and services to meet the new demands. The population of the City tripled in the years following 1940. The influx of new residences created a housing and services drought, which led the City to build a new bank, library, police and fire, and rail station. Activity at Camp Pendleton helped the City economically during the 1950s. By the end of that decade, the base had a monthly payroll of $4 million, which in part was spent on Oceanside's business and entertainment. Many Marines and their families lived in the City as well. From 1946 to 1952, the value of Camp Pendleton housing climbed from $1.5 million to $6 million. Between 1950 to 1960, the population almost doubled to just under 25,000.

By 1939, increasing international conflict made it likely that the United States would become involved in a major war. After Germany attacked Poland in September 1939, a general European conflict quickly arose. President Franklin D. Roosevelt's declaration of an "unlimited national emergency" and the institution of a draft in 1939, followed by the attack on Pearl Harbor in December 1941, created an immediate need for a large combat training and exercise area for the rapidly growing military. Marine Corps planners embarked on a search to find a suitable training area on the West Coast. Up to this time, Corps training was limited to Quantico and Parris Island on the East Coast and San Diego on the West Coast. The Marine Corps Recruit Depot (MCRD) at San Diego was the center for Marine activities in the Pacific and its related facility at Camp Elliott, north of San Diego, was being used for small unit training, but before Pearl Harbor no large unit training facility was available.

The Marine Corps considered land surrounding the Santa Margarita y Las Flores Rancho near the city of Oceanside especially desirable for training because of its vast undeveloped acreage and varied terrain. The expansive region, which included miles of beaches, was especially well suited for amphibious exercises. This was of particular importance to the Marines, because greater emphasis was being placed on amphibious warfare in the Pacific against the Japanese. With this as its goal, the Department of the Navy acquired approximately 130,000 acres of land belonging to the rancho for $4,239,062 in March 1942. The Marine Corps named the new West Coast Marine Corps training installation Camp Joseph H.

Pendleton, in honor of Major General Joseph Henry Pendleton, former Commandant of the Corps and champion of the Corps' development of facilities in San Diego.

The development of the new training camp was based upon the wishes of the Commandant of the Marine Corps, Major General Thomas Holcomb. The camp was designed to provide facilities for 20,000 men, with the possibility of expanding to 30,000. The plans for the initial 20,000 recruits included housing and training facilities for all units and weapons of infantry divisions, as well as an infantry regiment. Marine Corps planners also established a landing field for planes operating with division units, a protected boat basin with shop facilities, an anti-aircraft range, rifle ranges, and anti-mechanized vehicle ranges with fixed targets.

Development and Construction of Camp Pendleton, 1942 – 1945. Construction on the new base commenced immediately. J.E. Haddock, Ltd. of Pasadena and Engineers Ltd. of Los Angeles and San Francisco handled all the immediate construction projects and Myron Hunt, H.C. Chambers, and E.L. Ellingwood served as the camp's original architects. Between 1942 and 1945, the Navy Department spent over $25 million on base construction and improvements. To facilitate the building process, the contractors erected several huge warehouses to receive and store building materials, tools, and equipment. They also installed a lumberyard, mill, steelyard, rock quarry, and a hot plant to supply asphalt for the roads. The remoteness of the base worksite made it necessary to establish barracks and a commissary for many of the 5,500 workers involved in the project. BuDocks and base authorities issued gasoline rationing books to those forced to travel long distances from their homes to Camp Pendleton to work. The job site operations of these facilities resulted in tremendous savings both in terms of time and money. The labor force worked at a frenzied pace to transform the former isolated rancho lands into a staging and training area for the incoming Marines.

BuDocks issued Contract Nay 5468 for the initial base development, which covered the construction of 518 buildings, a boat basin, eighteen combat and firing ranges, and various infrastructure such as roads, sewers, water, and electrical systems. In July 1943, BuDocks issued a second contract, Nay 7088, to expand existing facilities. Work under this contract included the relocation and reconstruction of the contractors' barracks to house Women Reserves, the expansion of the Boat Basin, as well as the construction of the Amphibian Tractor Battalion Training Center and Beach Battalion School, the Naval Hospital, and miscellaneous facilities in the Del Mar and Mainside areas. In 1944, laborers constructed forty Homoja housing units in Area 24 under Contract Nay 8556. Although civilian contractors undertook the majority of base construction, the Naval Construction Battalions (Seabees) handled smaller work orders. In 1944, they built themselves a Quonset hut training camp in the Vado del Rio area (Area 25), which was only the second Seabee training camp located on the West Coast.

Initial construction under Contract Nay 5468 took place in what is known as the Mainside area. The Marines sub-divided the region into smaller sections that were numbered in order of their construction, beginning with Area 11 and ending with Area 18. Because the installation was built in separate phases, the first digit of each area referred to the phase in which the building was constructed and the second digit indicated to the priority of construction. Thus, Areas 11, 12, 13, 14, 15, 16, 17, and 18 were part of the base's primary construction period, followed by phase 2 (Areas 20, 21, 22, 23, 24, 25, 26, and 27). Phases 3, 4, 5, and 6 came after the war.

Fears of bombing raids during the first years of World War II influenced early construction patterns. Unlike many military installations developed prior to the war, buildings at Camp Pendleton were not designed and laid out according to a formal plan, but were deliberately situated in a random fashion.

Additionally, all structures were painted a pale camouflage green and featured a light concrete coating under the roofing to further protect against bombing.

Construction during phase I and 2 included housing, administration, service, and utility buildings. In addition to these structures, laborers constructed four water reservoirs, two sewage disposal plants, and three magazines. Base planners divided buildings into two major classifications: I) those with concrete slab foundations (storehouses and shop buildings); and 2) those with post-and-pier foundations (barracks, administrative buildings). The threat of flooding from the Santa Margarita River and smaller streams running through the base made it necessary to use post-and-pier foundations for housing and administrative structures near the drainages. This design was carried to other buildings not so threatened. The Marines chose the standard Navy BI type barracks with battalion mess halls over the smaller Army style because the BI type barracks were bigger and would thus occupy less total space than would numerous smaller Army style barracks.

Base authorities also created tent camps, numbered Tent Camps I, 2, and 3, in the outlying canyon areas west of the Mainside area, and purposely dispersed them to reduce the potential threat from enemy bombing and fire hazards. Each camp site included a water distribution system with wells and storage tanks, the installation of a sewer system, including concrete septic tanks, tile disposal fields, and chlorination buildings, and the construction of fire maintenance and guard buildings. Quonset huts quickly replaced the thousands of tents that were initially erected in the three Tent Camps.

Weapons training facilities included construction of a rifle qualification range (located near present day Area 25), a machine-gun qualification range (located in the Chappo/22 Area until it was abandoned to make room for industrial structures), and anti-mechanized vehicle range (located near Tent Camp I), machine-gun combat ranges, mortar combat ranges, small arms combat ranges, technique of fire ranges (all located near Tent Camps I, 2, and 3), rocket ranges, both inland and seaward (located near Tent Camp 3 and along the coast), and artillery ranges (located near Tent Camp 2). Each usually included target control towers, concrete observation posts, and service buildings.

The construction of the rifle range included a water distribution system with wells and storage tanks in addition to a sewage system. Firing lines and the target butts were connected by an underground intercommunicating telephone system. Construction of the target butts and firing lines required extensive excavation and filling. A large concrete retaining wall with a concrete platform measuring over one-quarter of a mile long was constructed to support the target frames. The anti-mechanized vehicle firing range featured a target control tower, car shed, water supply system and storage tank, as well as track measuring two-and-a quarter miles in length. The technique and firing ranges featured six reinforced concrete musketry range structures in addition to facilities to operate surprise targets. The artillery range included five reinforced concrete observation posts. The rocket ranges, used primarily for experimentation and proof testing, included firing points, observation posts, and heating and refrigeration facilities for rockets and workshops.

President Franklin Roosevelt officially dedicated Camp Pendleton in September 1942. During his visit, he inspected the old Ranch House, which was being used as an officers' mess and suggested it be refurbished and preserved in commemoration of the ranch's rich history. Upon his recommendations, the house and adjoining buildings were restored and have been so maintained ever since as a direct order from the Commander in Chief. The officers' mess closed in 1945 and for two years, the Ranch House operated as a museum. In 1947, Major General Graves B. Erskine became the first commanding

general to reside at the house, and since that time, every succeeding commanding general has followed that tradition.

Camp Del Mar. Camp Pendleton planned and developed its Boat Basin in the winter of 1942. Located in the Del Mar area (Area 21), the Basin is used for amphibian tractors and landing boats and is similar in design to the Boat Basin located at the Training Center, Fleet Marine Force, Marine Barracks, New River, North Carolina. Camp Del Mar was constructed for multipurpose use, but mainly as an amphibious training center, which included Shore Party Personnel training, Navy Field Medical training, and a special Landing Vehicle Tracked (LVT) Test and Experimental unit, used to test and develop future amphibious vehicles. It is also the gateway to an eighteen-mile-long shoreline, used by the Corps for amphibious warfare training. The opening, which is under the north-south running railroad tracks and Interstate 1-5, enables the landing party access to the northern areas of Camp Pendleton. During World War II, the Marine Corps authorized the construction of barracks and a mess hall for 500 amphibious personnel at Camp Del Mar, in addition to administration, shops and storage buildings, a small craft harbor with an entrance channel, landing boat moorings, a pier, jetties, and groins. After being damaged by heavy seas during a storm in' January 1943, the northerly jetty was extended by 735 feet to further protect the small craft harbor.

Initially the camp was separated into three separate areas known as North Camp, Central Camp, and South Camp. The South Camp housed a Navy Construction Battalion (Seabees), who participated in the construction of Camp Del Mar. The Amtrac Marines were stationed in the North Camp, and the Navy Field Medical training unit was situated in the Central Camp.

Between 1942 and 1945, Marines of the Amphibious Force, Pacific Fleet, as well as a Navy Landing Craft Detachment of the Amphibious Force, Pacific Fleet, underwent training at the Boat Basin. The Navy detachment provided the boats necessary to train the Marines. A school was developed specifically for teaching operations and maintenance of the LVT. With the addition of a Radio Communication class, the school was named the Signal and Tracked Vehicle School Battalion. During these years, a detachment of small boat sailors manned several Landing Craft Vehicle Personnel in the Boat Basin to provide for the "wetnet" training of Marines stationed at Del Mar. This training used huge, wooden dummy troopship hull side and deck areas, draped with cargo nets to simulate debarkation stations found on World War II transport ships. With the advent of improved amphibian techniques, wet net training was no longer deemed useful and was ended.

Camp Del Mar continued to serve as a training school for ten to eleven World War II operating battalions and three armored battalions of LVTs. After World War II, the Marine Corps deactivated all of the LVT battalions with the exception of the IsI and 2nd LVT Battalion and one armored battalion (the lst Amtrac Battalion).

World War II and Camp Pendleton, 1942 -1945. Although Camp Pendleton originally served as an auxiliary training camp for the Marine Corps Base at San Diego, it quickly became the center of West Coast Marine Corps activity as the Corps took on an increasingly crucial role in amphibious warfare necessary to wrest control of the Pacific Islands from the Japanese. Throughout the war, Camp Pendleton trained Marines for all-out combat in the Pacific. Its land area was large enough to support training for three full divisions. In 1942, Camp Pendleton received its first combat unit, the 9th Marines, who arrived on foot after a four-day march from Camp Elliott near San Diego. Commanded by Colonel Lemuel Shepherd, (who later became Commandant of the Corps), the 9th Marines were a reinforced

regiment that had been training at Camp Elliott and later became part of the 3rd Marine Division. The 4th and 5th Marine Divisions arrived at Camp Pendleton after the 9th Marines.

The divisions were headquartered in the Mainside area of Camp Pendleton, while units were assigned to the tent camps for training. Area II served as the Division Headquarters, Area 12 housed the Service Troops, and Area 13 housed the Special Troops. The 1st Infantry Regiment was located in Area 14, the 2nd Infantry Regiment in Area 15, the 3rd Infantry Regiment in Area 16, and the Artillery Regiment in Area 17. The Post Troops occupied Area 24. The Marines assigned troops to the camp areas to experience more realistic field conditions. Each camp was self-contained and fully equipped for its unique training requirements. The camps included a Marine exchange, theater, library, club, and recreational facilities, as well as combat and rifle qualification ranges for training. The troops used the ranges for machine gun, rifle, and mortar firing, and for combat training in the use of grenades and bayonets. Marine training also involved long physical conditioning hikes through the wild terrain and numerous large-scale amphibious assault exercises along the shore and at San Clemente Island, located at sea, sixty miles northwest of the base. Tent Camp 2 (now Area 52) was home to the 4th Raider Battalion, an elite fighting force led by Colonel James Roosevelt, President Roosevelt's son. Activated in 1943, the Raiders were a select group of Marines who specialized in landing on beaches generally regarded as impregnable. Once overseas, the 4th Raider Battalion joined the 151 Raider Battalion and two other battalions to form the 151 Raider Regiment. In 1944, these four battalions formed a new4th Marine Regiment, replacing the original one lost in the Philippines in 1942. This regiment then merged with the 22nd Regiment to form the 1st Provisional Marine Brigade, which was redesignated as the 6th Marine Division in 1944.

In 1944, the Marine Corps declared Camp Pendleton a permanent installation. Camp Elliott merged with Camp Pendleton, and Pendleton became the biggest Marine camp in the nation, with a population peaking at 86,749 Marines, sailors, and civilians. The Fleet Marine Force, San Diego Area headquarters, which had been located at Camp Elliott, moved to Pendleton, and Camp Elliott became a distribution center for the Navy.59 Prior to the merger, Camp Pendleton had been chiefly responsible for training Marines assigned to Engineer, Artillery, Field Signal, and Amphibious Tractor Units. The consolidation of the two camps resulted in increased responsibility for Camp Pendleton as it assumed control of various training activities that had previously taken place at Camp Elliott. Activities included training infantry replacement battalions and conducting specialist schools such as Cooks and Bakers, Shoe and Textile Repair, Motor Transport, Ordnance, Scout and Sniper, Officer Candidate Detachment, and Navy Hospital Corpsmen assigned to combat units. The activities merged into a single Training Command at Pendleton. To make room for these incoming men, the Marines erected thousands more tents and Quonset huts in Areas 21 and 24.

Navajo Code Talkers and World War II. The Marine Corps Navajo Code Talker Program was established at Camp Pendleton in 1942 when twenty-nine Navajos were recruited and completed boot camp at Camp Elliott in San Diego. The program started as a result of Philip Johnston's recommendation to Major General Clayton B. Vogel, Commanding General of the Amphibious Corps, Pacific Fleet. Johnston, the son of a missionary to the Navajo tribe, was fluent in their language and believed its use could guarantee communications security because it was an unwritten language completely unintelligible to anyone except the Navajos. Upon Vogel's recommendation, the Marine's established a pilot program using the original twenty-nine Navajos, and after successful results set up a permanent program at Camp Elliott and Camp Pendleton. Following basic boot camp at Camp Elliott, the Navajo recruits were sent to the Field Signal Battalion Training Center at Camp Pendleton (located in Area 13) where they were trained in standard communication procedures and equipment. Instruction included operation of radios, running

and repair of communications cable, and sending and receiving Morse code. While at Camp Pendleton, the first group of Navajos devised Navajo words for military terms that were not part of their language. Once they had completed training, they were assigned to one of the Marine's three combat divisions. By the end of the war **in** 1945, nearly 420 Navajos were involved. The Code Talkers proved to be highly successful in their training and in combat situations, where they were able to reduce the delivery time of messages, which would have taken longer if using conventional cryptographic techniques.

Post World War II at Camp Pendleton, 1946 -1949. At the close of the war, Camp Pendleton became a demobilization center for Marines returning from the Pacific Theater. The base processed and sent home more than 50,000 men, including the African American Marines. It also completely disbanded the battalion of Women Marines and Navajo Code Talkers at Pendleton. As divisions were reduced or disbanded, the total population of the Marine Corps rapidly went from a high of 485,000 in 1945 to a low of only 80,000 in 1947.

In 1946, General A.A. Vandegrift, who was General Holcomb's successor as Commandant of the Marine Corps, ordered that Camp Pendleton remain the center of all Marine Corps activities on the West Coast. He designated the base as the permanent home of the 1st Marine Division and the Signal Communication School. This battalion moved from Camp Lejeune, North Carolina to the Del Mar area (Area 21) to reduce the concentration of Marine Corps training on the East Coast. Camp Pendleton's title was changed from "Marine Training and Replacement Command, San Diego Area to "Marine Barracks, Camp Pendleton.'

Following the war, Camp Pendleton underwent many changes to make it a more permanent facility. Major General Graves B. Erskine assumed command of the station in 1947 and was the first base commander who operated the installation as a separate command rather than as part of the Corps' San Diego Area command. General Erskine worked to develop the base into a first class Marine Corps facility. Upon his arrival, he moved into the old Ranch House, and set about rebuilding and upgrading the camp's facilities. Changes he ordered included planting trees, installing lawns, and most importantly, renovating wartime temporary buildings. A shortage of funds and building materials at this time required the Marines to refurbish old buildings (which included replacing windows, doors and repainting structures) rather than construct new ones. Consequently, the Corps placed large construction projects on hold indefinitely.91 Marines tore down tents and replaced them with Quonset huts in the outlying camp areas and renovated barracks, including thirteen barracks in Area 17, which were converted into ninety-one married officers' apartments. The Corps allocated $130,000 to construct a beach club at San Onofre (Building 51811), and additional funds were allocated for construction of a commissary at Chappo Flats, a golf club house in Area 18, and for a library to be built across from the Headquarters Building in the Mainside area. Because of the difficulty in obtaining labor, the Marines undertook nearly all of the post-war construction work until the start of the Korean War, when the base hired private contractors to speed the process.

The Korean War and Camp Pendleton. At the start of the Korean War, only 9,000 Marines of the 1st Division, along with a small maintenance force, were stationed at Camp Pendleton. After hostilities commenced in June 1950, the Marines embarked on a massive build-up in an attempt to meet the growing needs of the war. President Truman authorized the Marine Corps to call up its Organized Reserves, and the Chief of Naval Operations ordered extra personnel to Camp Pendleton.

Within ten days, twenty-two reserve units (mostly battalions) reported to the installation. At the same time, Congress passed legislation extending by one year the duty of all enlisted men who would have

been ready to leave the service by July 1951. Along with Marine Corps Air Station, El Toro, Camp Pendleton processed and trained the majority of replacements (nearly 200,000) sent to Korea. Marines from posts and stations throughout the country, along with reconditioned arms and weapons, flowed into Camp Pendleton. The Marines eased the manpower shortage by calling in nearly 500 civilians to help test and inspect equipment prior to its shipment overseas. Training consisted of little more than physical conditioning exercises and equipment test firing, as pressure mounted to move troops out as quickly as possible.

To assist in training, the Marines created the Training and Replacement Command and the First Advanced Infantry Training Regiment. The Training and Replacement Command, located at Camp San Onofre (Area 52), was organized to handle the influx of reservists reporting for active duty. The First Advanced Infantry Training Regiment, designated to provide four weeks of combat training for boot camp graduates, settled in Camp 1 (Las Pulgas/Area 43).

In an effort to train the incoming Marines in the most realistic combat conditions possible, the 7th Engineer Battalion built a "combat town" to simulate a North Korean village. Indigenous materials were used for construction - bamboo from the Santa Margarita riverbed, shingles from scrap lumber, and reeds for the roofs were taken from Lake O'Neill. Similarly, the Marines moved Camp Pendleton's satellite mountain warfare training facility from Idyllwild in the San Gabriels to Pickel Meadows in the high Sierra Nevada west of Bridgeport, California.

Development at Camp Pendleton, 1950 – 1953. Construction at Camp Pendleton during the Korean War years was completed at a frenzied pace and even exceeded what had occurred during World War II. With the dramatic increase in base population, Camp Pendleton authorities requested and received over $24 million for construction work from the Senate Armed Services Committee. After passage by the Congress, the appropriation was used to begin immediate construction on additional Quonset huts, new barracks, and training facilities desperately needed by the station. To provide housing for all the incoming troops, Camp Pendleton's first permanent barracks were constructed in 1952 for $3.5 million. Ten barracks, a mess hall, an administration building, a combination recreation hall/exchange, two storehouses, and a boiler house were built in Area 22. Although these barracks were designed to hold 100 men, they billeted 150 owing to the general lack of housing on base.

Also in 1952, the Marine Corps designated Camp Pendleton as the headquarters for the Island 3rd Marine Divisions. Congress authorized $15 million to build post exchanges and four additional field training camps: Camp San Mateo (Area 62), Camp Las Pulgas (Area 43), Camp Homo (Area 53), and Camp Santa Margarita (Area 33). Camp Santa Margarita was located near the Santa Margarita River, Camp Las Pulgas adjacent to Tent Camp I, Camp Homo between Tent Camps I and 2, and Camp San Mateo was located between Tent Camps 2 and 3. At the same time, Tent Camp I assumed the name Las Pulgas and incorporated the area along Las Pulgas Road near its junction with Basilone Road. Tent Camp 2 became San Onofre (Area 52). The planners designed the camps to house 13,000 men each and utilized the compact unit principle employed at Twentynine Palms, meaning that each camp was divided into battalion areas with a parade ground flanked by barracks and a mess hall and administration building at opposite ends. Also, like Twentynine Palms, the designs called for pre-cast or 'tilt-up' construction method to raise the reinforced concrete buildings. Concrete structures were considered more efficient and economical than wood frame or Quonset huts, which had lower initial expenditures, but much higher maintenance costs during the life of the facility. At this time, the Marines set aside an additional $1 million to improve the rifle ranges as well as enlarge or construct new ranges adjacent to the new tent camps.

Post-Korean War Period. The Marines fought the Korean War valiantly and successfully and were rewarded for their efforts by gaining both respect and recognition from the U.S. Government. After 1954, the new Eisenhower administration placed emphasis on maintaining the Corps as an effective fighting force. In the years that followed the Korean War, military planners and strategists began to view war as a more or less continuous condition, not a short-term objective; thus, the government took measures to build a more permanent and combat-ready Marine Corps. With this in mind, Major General John Sheldon, commander of Camp Pendleton, embarked on a long-range planning program to make the camp a permanent facility. In 1953, the official name of Camp Pendleton changed from Marine Barracks, Camp Pendleton to its current designation, Marine Corps Base, Camp Pendleton.

After the Korean War, the installation served as a training facility and provided administrative and logistical support for Fleet Marine Force units and replacement units. Camp Pendleton was not only home to the 1st Marine Division (which returned in 1955 after a five-year tour in Korea), but also the 51h Marine Division, located in the Santa Margarita area. The 2nd Battalion, (later called the Ready Battalion Landing Team) occupied Camp San Mateo, and the 1st Pioneer Battalion took up residence at Camp Talega. This battalion served as an Engineer Battalion in Korea where it built bunkers and reinforced defense positions. At Camp Pendleton, the battalion built rifle and pistol ranges, maintained roads and bridges, and placed training mine fields and booby traps for the three regiments.

In the late 1950s and early 1960s, the Marine Corps took steps to improve troop organization and fighting techniques aimed at increasing strategic and tactical mobility without sacrificing combat effectiveness. The threat of nuclear warfare and the development and success of vertical envelopment in particular, required the Marines to develop changes in tactics and strategy. Based on suggestion of the Hogaboom Board (a high-level board appointed to reexamine Marine Corps doctrine and organization), the Corps decided on a thorough reorganization. It was faced with the difficult task of adapting the helicopter to amphibious warfare without minimizing the Marines' "force in readiness" role. During the Korean War, vertical envelopment had enabled troops to move quickly and effectively onshore and to higher ground, thereby avoiding heavy gunfire and obstacles such as barbed wire and/or moats. To make Marine divisions more flexible and mobile, Corps strategists determined they needed to be reduced in size by at least ten percent. The idea was to create divisions that could be entirely airlifted for combat. Tanks and other heavy equipment could be transferred to other troops who would provide support if necessary.

The Marines tested their newest theories in amphibious operations by conducting large-scale exercises on the beaches of Camp Pendleton throughout the 1950s and 1960s. Among the largest and most elaborate were Operation Greenlight and Exercise Silver Lance. Exercise Silver Lance involved 55,000 sailors and Marines, 60 ships, and 520 aircraft. This exercise proved that the Marines could airlift nearly a complete regiment into battle by helicopter. These exercises involved advance troops moving by helicopter on high ground as other troops moved ashore from various landing craft. Opposing "guerillas" attempted to thwart efforts by cutting communication lines, etc.

Development at Camp Pendleton, 1954 – 1962. Although Camp Pendleton remained a busy installation in the years following the Korean War, Congress appropriated little funds for construction. This was mostly the result of a protracted legal battle between the federal government and Fallbrook residents over the waters of Santa Margarita River. Both parties felt entitled to use the water from the river that flowed through the base. This complicated trial, which began in 1951, ended seventeen years later in a

compromise allowing the Fallbrook water district and Camp Pendleton to each construct a dam in order to take the share they were allotted.

During most of those years, Congress was hesitant to approve construction funding, fearing that an adverse judgment in the suit could affect Camp Pendleton's overall water supply and thus its future. On numerous occasions, Congress denied or reduced funds requested for construction. In 1955, the House Armed Services Committee eliminated all but $260,000 of $6,740,000 slated for construction. The Marines used the $260,000 to dig additional wells at the field training camps. The initial tank park and maintenance facilities were constructed in the Las Flores (Area 41) area in 1955. Three years later, the Marines were able to secure funding to construct the Del Mar Beach recreation facilities, which included two beach houses, rest rooms, showers, and a number of picnic shelters and barbecue stands.126 The general feeling in the Corps was that construction at Camp Pendleton was not in crisis because its many temporary buildings could last longer in Camp Pendleton's mild climate. Furthermore, despite its reputation as the leading amphibious training camp in the United States, Camp Pendleton was still considered new and therefore was not as traditional within the Marine Corps establishment, as installations such as Parris Island on the East Coast.

In 1961, the Navy Department planned a major Marine Corps expansion in the San Diego area that was to have a direct effect on Camp Pendleton. The proposed five-year plan suggested consolidation of the majority of Marines to Pendleton because of the area available. In an effort to make up for the construction freeze caused by the water rights dispute, Congress allocated $40 million to Camp Pendleton to replace all temporary construction and build permanent facilities for housing and maintenance of troopS.129 Of the $40 million, the Corps allocated $5,873,000 to build eight permanent BEQs (Buildings 210721, 210722, 210724, 210725, 210821, 210822, 210824, and 210825), two mess halls (Buildings 210702 and 210802), a combat training school (Building 210730), and two additional battalion administration buildings (Buildings 21070 I and 21080I) in the Del Mar area. An additional $6,500,000 was used to construct 400 units of Capehart housing near the Del Mar area. 130 The architectural firm of Frank L. Hope & Associates designed the BEQs and adjoining structures in Area 21 and in 1966, made significant contributions toward the development of Area 41 (Las Flores Area).

The Vietnam War and Camp Pendleton. In January 1966, Secretary of Defense Robert McNamara authorized plans to increase the Marine Corps from 85,200 to 278,000, about 25,000 more than during the height of the Korean War. At Camp Pendleton, the IS' Marines were immediately shipped out and for the remainder of the war, their time split between Vietnam and Okinawa. With the departure of the 1st Marines in March, the 5th Marine Division was reactivated to serve as the permanent West Coast combat ready force. Although this division did not deploy to Vietnam, its 13lh and 27th Regiments were trained and sent into battle. The latter airlifted directly from Camp Pendleton to counter the Tet Offensive in 1968 and in doing so became the first regiment to fly from the United States directly into combat. The activation of the 4th Division as a reserve unit and the formation of a regimental landing team (RLT) with the 7th Marines as the nucleus followed the activation of the 5th Division. The 11th Marines artillery battalion joined the battalion to form RLT-7 and were immediately sent to Vietnam.

Mostly because of its strategic location, Camp Pendleton became the Marine Corps' chief training installation during the Vietnam conflict. Marines from around the country arrived at the station and were immediately assigned to the Staging Battalion. The Staging Battalion during the Vietnam War was what the Training and Replacement Command had been in World War II and Korea, the final jumping-off point for Marines going into battle. Once assigned to the Staging Battalion, a Marine joined a unit and trained intensively for fifteen days in a program oriented toward countering guerilla warfare. The first

few days involved administrative processing and routine lectures and inspections, followed by tactical weapons training involving M-14 and M-16 rifles and the M-60 machine gun. The troops took part in strenuous physical conditioning and were introduced to elements of guerilla warfare such as mines, booby traps, and ambushes. To enhance training, the Marines established schools tailored specifically to meet this new threat. Instructors traveled to Vietnam to learn their enemies' fighting techniques and passed them on to the trainees. The majority of the guerilla warfare training took place at Camp Las Pulgas and in the wooded terrain behind the Naval Hospital in Area 26. Between 6,000 and 8,000 Marines were trained each month for duty in Vietnam.

The Corps also built new combat villages to further assist Marines in improving jungle fighting skills, as well as to provide enough training areas for the influx of troops into the station. They were situated in the Homo area (Area 52), beside DeLuz Creek, behind the Naval Hospital (Area 27), and near Las Pulgas in the Piedra de Lumbre Canyon (Area 43). Marines learned to fight amongst bamboo structures complete with underground tunnels, concrete bunkers, and barbed wire. These villages were designed to teach fighting techniques, as well as to acquaint Marines with the traditions and cultures of Vietnam. After two weeks, the Marines were sent to Marine Corps Air Station, El Toro or Norton Air Force Base, and from there flew on to Vietnam.

Camp Pendleton could not escape the growing civil strife during this period. Desertions from the Staging Battalion and unauthorized absences became more frequent. Marines causing unrest were disciplined and sent to the base brig. Unruly inmates coupled with overcrowding created a tense environment leading to numerous prison riots and complaints over brig conditions. Military, as well as, congressional investigations took place to investigate the matter, resulting in the construction of a new brig in 1971.

As the American commitment in Vietnam wound down, the 5th Marine Division was disbanded in 1969 and the 1st Division came home in 1971. Although President Johnson and more importantly, President Nixon took steps to slowly withdraw from Vietnam, the withdrawal had little effect immediate effect on Camp Pendleton. As long as fighting continued, there was a need for troop replacement and activity at Pendleton continued at a rapid pace. In 1971, the Marine Corps reassigned 1 Marine Expeditionary Force (I MEF), which had been activated in Okinawa in 1969, to Camp Pendleton. The 1MEF is comprised of the 1Sl Marine Division, 3ed Marine Aircraft Wing, 1st Force Service Support Group, the 11th, 13th, and 15th Marine Amphibious (later expeditionary) Units, the First Surveillance, Reconnaissance, and Intelligence Group, and a Headquarters and Service Company. This unit plans and conducts missions directed by the commanding general, Fleet Marine Force, Pacific. Between 1969 and 1970, nearly 80,000 Marines trained at Pendleton and then went to Vietnam.

Development at Camp Pendleton, 1963 – 1975. Camp Pendleton experienced a population explosion between 1966 and 1967. The total population increased from a low of 15,000 after the departure of the 1st Marine Division in early 1966, to about 39,000 in August of 1967, and 43,000 in December of 1967 after the reactivation of the 51b Marines. This number was even greater than the peak training periods during World War II, creating a tremendous strain on Camp Pendleton's resources and causing a major construction boom. For example, owing to the influx of recruits from MCRD, facilities at Edson Range became overtaxed. The men had to camp in the western portion of Camp Margarita during their two-week marksmanship training course. A variety of construction projects got underway during this period. In 1964, the Corps constructed a new air control tower and helicopter hangar for the airfield, which doubled the capacity of the airport. In 1966, a $2 million Marine base exchange complex opened in Area 11. The manpower buildup also required the opening of a new recruit rifle range. With the reactivation of the 51b Division, demand for housing was so great that nearly two-thirds of new arrivals occupied

tents in the Homo (Area 53) and San Onofre (Area 52) areas while permanent barracks were constructed. The tents, called strongbacks, were 32-foot x 16-foot canvas covered structures resting on concrete blocks. Of the 6,500 Marines and Navy personnel who needed housing, only 2,500 could be accommodated by Camp Pendleton's existing permanent facilities.

The tremendous growth in population experienced by the base led to an accelerated building program. In April 1967, the 5th Division moved four of its battalions into modern $3.8 million barracks at Las Flores (Area 41). To further accommodate the troops, the Corps approved a $1.9 million regimental headquarters complex for the San Mateo (Area 62) and Homo (Area 53) areas, consisting of thirteen pre-cast concrete buildings. The structures for the San Mateo area included administration and recreation buildings, a supply center, and a combat vehicle maintenance building. The units at Homo received maintenance shops and classroom buildings for motor transport outfits. The Corps also approved plans for a new 64,000-square-foot base headquarters building (Building 1160) constructed of pre-cast concrete walls. The contractor brush hammered the building's concrete walls to produce a rugged appearance, which reflected the Marine Corp's traditional role. The $1.2 million facility was located on Vandegrift Boulevard. P.H. Lusardi Construction Co. served as engineer for the new headquarters building, in addition to the structures in the San Mateo and Homo areas.

In the fall of 1967, the mounting financial cost of the war in Vietnam led President Johnson and Secretary of Defense Robert McNamara to order a major military construction freeze. This temporarily stopped construction projects amounting to $4,036,000 in the San Diego area, including Camp Pendleton's proposed base theater, senior noncommissioned officers' barracks, and a mess hall at Camp Del Mar. Ten days later, the Navy reversed course and decided to go forward with its San Diego projects, deeming them crucial for support of the Vietnam War.169 In 1968, a $1.7 million BOQs opened in the Del Mar area. Available to both unmarried men and women, these new facilities were designed to house 168 persons and featured 12 two-room suites for senior officers, 132 suites with a combination bedroom/living room, and 24 single rooms. All had private baths. The construction of the new base theater for Camp Pendleton, however, did not take place until 1970.

Camp Pendleton experienced a major construction boom in the early 1970s with more than $32 million spent on new structures and an additional $27 million allocated to maintain existing buildings. In 1970, the Defense Department approved a $2.1 million housing project for Area 17, near the San Luis Rey Gate. The Corps allocated additional funds to build a total of 102 houses for the families of colonels, majors, and lieutenants. Base contractors demolished 103 World War II-era structures to make room for the new houses. This project, which was the largest housing project undertaken at Camp Pendleton since World War **II,** made use of the new "turn-key" concept of military construction where the contractor, Leadership Housing Systems, Inc., was allowed more design freedom. Greater flexibility contributed to the houses being completed more than four months ahead of schedule. In 1970, base authorities authorized the construction of a mess hall and barracks in Area 52, and a recreational bowling facility was completed in Area 13.

In 1971, Southwest Division Naval Facilities Engineering Command awarded Fuller American Company $2,354,400 to construct a new brig for Camp Pendleton. The former brig, which was overcrowded, was an obsolete group of World War II buildings surrounded by a chain link fence topped with barbed wire. 174 Fuller-American designed the new facility (located in Area 24) in a wheel configuration, with a one-story central guard facility at the core, from which radiated six spokes. Each spoke was designed to house minimum and medium security prisoners as well as administrative offices. When finished, the new brig was the most modern correctional facility in the Corps, complete with a

dining hall, chapel, medical facility, woodshop, small engine repair shop, and an electronics maintenance shop. It was designed to confine a total of 495 prisoners.

As Commanding General of Camp Pendleton in 1970, Major General George S. Bowman authorized the remodeling and expansion of the Ranch House and adjoining buildings and in 1972, the complex was opened as an official museum on base. Later that year, the Infantry Training School, located in Area 52, commenced construction on a new Combat Town to replace an older one built in 1952. Also located in Area 52, the new combat town was composed of pre-fabricated modular structures. It included two gun pits, hidden demolitions, and a concrete block tunnel with concealed entrances. Like the older combat town, which base authorities had condemned and declared unsafe, this combat town provided students of the Infantry Training School (located in Area 52) a means to learn urban assault and combat in built-up areas.

In December of 1972, Camp Pendleton embarked on a BEQ modernization program, to renovate outdated, open bay barracks into more modern-style BEQs with separate rooms. Each room was designed to house two to three Marines and included a bathroom and lounge area. Base authorities approved the remodeling of BEQs in Chappo Flats (Area 22), Camp Las Pulgas (43), Camp Homo (53), and Camp San Mateo (62), as well as plans to construct new BEQs in the Mainside Area.

In 1973, in an effort to alleviate the continuing housing shortage, base authorities approved construction of over 1,500 additional housing units, 148 mobile home pads, an elementary school, and a children's playground on base. These were divided among San Onofre (Area 52) which received 748 two-, three-, and four-bedroom houses for enlisted men and officers, and Wire Mountain (Area 20), which received 800 additional base housing units for 600 enlisted men and 200 officers. 178 Additionally, the Marines made plans to upgrade dispensaries and dental clinics, add a shopping center to the north end of the base, construct a new hangar and support buildings for the airfield, as well as a new SNCO Club at Wire Mountain.

In 1974, the construction firm of Montgomery Ross Fischer Inc. completed an eight-story, $26-million Naval Regional Medical Center designed to serve surrounding bases, including Fallbrook Naval Weapons Facility; the Marine Corps Air Station, El Toro; the Marine Corps Supply Center at Barstow; and the Marine Corps Base at Twentynine Palms; as well as military dependents in the area. This hospital, designed by William Pereira and Associates, replaced the 86 single-story World War II-era structures located nearby that had functioned as the hospital for the base. Although the hospital is located at Camp Pendleton, it is under jurisdiction of the Navy.

The Southeast Asian Refugee Camp. From April to October 1975, Camp Pendleton served as a refugee camp for over 50,000 Vietnamese and Cambodian refugees who had fled Southeast Asia during the communist takeover. The federal government chose Camp Pendleton over other military bases because of the vast space available, and because it had a climate at least somewhat similar to Southeast Asia. Open areas adjacent to Camps Talega (Area 64), Cristianitos (Area 63), and San Onofre (Area 52) became refugee centers because they were largely barren and undeveloped. Camp Pendleton's Marines worked around the clock to prepare the campsites upon receiving notification from Washington D.C. a scant 24 hours prior to the arrival of the first busload of refugees. Within the day, the troops erected 140 Quonset huts, 1,040 squad-sized tents with plywood floors, and 22 shower huts. In addition, they installed 200 telephone poles, 20 miles of power lines, 36 miles of communication cable, and 35,000 feet of water lines. In the summer of 1975, a Vietnamese artist, Nguyen Luu Dat erected a concrete sculpture entitled "Welcome Newlife," to commemorate the role of Camp Pendleton in the refugee

drama. The sculpture, located on Cristianitos Road near Area 63, depicts a Vietnamese child sitting in an open palm. It was meant to symbolize the warm welcome the Marines and Americans extended to the refugees. A total of 50,424 Southeast Asian refugees passed through Camp Pendleton in their search for a new life in the United States.

Base Development, 1976 to the Present. Following the Vietnam War, Camp Pendleton's population stabilized at 30,500, a number it more or less maintained for the next twenty years. In an effort to accommodate the Marine Corp's evolving role as an expeditionary intervention force, authorities embarked on a major construction and modernization plan. Earmarking $36 million for construction, with an additional $29 million for family housing, the base commander ordered that the majority of World War II facilities be replaced or upgraded to modern standards. In addition, the base improved its sewage treatment plants and upgraded the water distribution system at Camp Margarita (Area 33) and Camp San Mateo (Area 62). Base authorities authorized construction of modern BEQs in Camp Homo (Area 53), Las Pulgas (Area 42), Chappo Flats (Area 24), Del Mar (Area 20), and the Headquarters areas. They also authorized 1,400 housing units for married personnel including BOQs and BEQs in San Onofre (Area 52), South Mesa/Forster Heights, and O'Neill Heights in the DeLuz Canyon areas. Other projects completed during this time period included the construction of a new dining facility in Area 14, a dental clinic in San Onofre (Area 52), a new dispensary/dental clinic at Edson Range (Area 31), and a new 96,000-square-foot exchange warehouse, located directly behind the main exchange complex, in Area 11. In 1978, the Corps spent $1 million to refurbish the Area 17 Commissioned Officer's Mess (Building 1795), which included the addition of a new banquet room and the expansion of kitchen facilities.

That same year, the Del Mar (Area 20), Edson Range (Area 31), Chappo Flats (Area 24), Las Flores (Area 43), and Camp Homo (Area 53) received new BEQs. Unlike the World War 11and early Cold War-era barracks, which were built as open bays, these modern BEQs closely resembled college dormitories where two or three men shared a room and bath. The buildings included seismic features to enhance their ability to withstand earthquakes and decrease structural damage. Base authorities authorized improvements on the telephone exchange at San Onofre (Area 52) and Areas 12, 21, 24, and Area 52 received additional telephone switching equipment. The Corps constructed a new enlisted dining facility in Area 24 (Building 2403), which was the first on base to feature solar panels and water heaters.

In 1980, Camp Pendleton received $8 million for construction projects, including $1.1 million for a chapel (Building 31516), $4 million for unaccompanied enlisted personnel housing, and $2.44 million for facility energy and utility improvements.2OO Additional construction included a $6.7 million data processing center (Building 1164), located in Area 11, a $1.6-million motor transport maintenance facility for the 5th Marine Regiment, and a 300-unit residential complex at San Onofre (Area 52) for company grade officers and junior enlisted personnel. Authorities allocated funds to remodel the commissary in the Mainside area, which included the addition of 6,000 square feet to the facility. During this decade, the Corps also authorized the construction of BEQs in Areas 13, 14,24, and 33, new vehicle maintenance facilities in Areas 31 and 33, new armories in Areas 13, 14, 22, 31, and 41, and an Enlisted Men' Club in Area 33. The rifle ranges at 103, 116, 214, and 313 received new restrooms, towers, and auxiliary facilities.

In 1984, the base built 104 new housing units for junior enlisted personnel valued at $6.1 million in the South Mesa housing area of the base, and in 1986 a flight simulator facility was constructed at the Area 23 airfield.201 The Corps also converted Camp Pendleton's correctional facility into the first long-term prison for the Marine Corps. Owing to increasing overpopulation at the federal military prison at Fort Leavenworth, Kansas, Marine Corps authorities in Washington issued an order converting Camp

Pendleton's brig to a long-term confinement facility. Corps authorities issued orders to immediately upgrade the existing building, which included the installation of reinforced walls, new security screens and an additional chain link fence with barbed tape wire, double gates, and security turnstiles at all entrances and exits. The work annex located near the brig featured a new additional guard tower and a double fence. To provide necessary psychological support, the Marines assigned a full time Navy psychologist and civilian social workers to the brig and expanded existing vocational programs to assist prisoners in their eventual rehabilitation and transition to civilian life at the end of their terms.

In 1993, the Base Realignment and Closure Committee's (BRAC) authorized closure of MCAS El Toro and Tustin, which resulted in the relocation of four helicopter squadrons to MCAS Camp Pendleton. The federal government authorized BRAC funds to construct new hangars, aircraft ramps and refueling pits, training facilities, and housing. The Corps allocated an additional $107 million to construct a SEAL Training Course, new BEQs in Area 62, a Multipurpose Machine Gun Range, a fitness center/gym in Area 21, a child development center in the Mainside Area, and new housing.

II. MARINE CORPS AIR STATION CAMP PENDLETON

Established in 1942, MCAS Camp Pendleton is located north of and parallel to Vandegrift Road in Area 23. The air station currently maintains and operates facilities designed to support flight operations of a Marine aircraft wing, a Marine reserve aircraft wing, a Marine expeditionary force, as well as commanding training in the Camp Pendleton air-ground training complex. It provides air traffic control services and facilities, aircraft fire fighting and rescue services, weather service support to Camp Pendleton, and hot and cold refueling and defueling. It encompasses 410 acres, including a 6,000-foot runway, taxiways, and parking aprons. MCAS Camp Pendleton is also known as Munn Field, named after Lt. Gen. John C. (Toby) Munn, a distinguished Marine aviator who served from 1927 to 1964. His assignments included Commanding General of Camp Pendleton (May 1963 to June 1964) and Assistant Commandant of the Marine Corps.

The airfield was initially used to train Marine aviators during World War II. It functioned as a secondary runway for the much larger MCAS El Toro; as an alternate site for the then common airships (blimps) flying out of Lighter Than Air (LTA) Tustin; and as a dispersal field in the case of attack. During the “Cold War” period, which began virtually at the end of World War II, it was thought that the atomic bomb could be used to stop amphibious landings of the kinds that the Marines had used so successfully during World War II. New amphibious landing concepts, employing the then emerging technology of helicopters, were one of the responses to this change in the strategic situation. With the helicopter came the concepts of “vertical envelopment” and “vertical assault”. Supporting these new concepts then became the prime role of the Station. The first helicopters were assigned to the Station in the spring of 1956 and it has been principally a helicopter station ever since. Throughout the 1950s, 1960s, and 1970s, the Station and its squadrons took part in Marine aviation actions in Korea and Vietnam. Considerable growth in operations occurred during this period. By 1985, the Air Station was conducting more air operations than either MCAS El Toro or MCAS Tustin. To reflect its increase in airspace and mission, it was re-designated as an MCAS on 1 April 1985.

On 12 January 1987 MCAS Camp Pendleton was commemoratively named Munn Field after Lt. General John C. (Toby) Munn, a distinguished Marine aviator who served from 1927 to 1964.

Throughout the 1990s and into the new millennium, the Air Station's squadrons have deployed to Iraq, Afghanistan, Africa, and Japan. Additionally, following various Base Re-Alignments and Closures (BRAC) in the 1990s, the Air Station has become considerably more active in operational terms and ever more vital to the future of Marine aviation. As the integral fifth element of the Marine Air Ground Task Force, MCAS Camp Pendleton will continue to be a force in readiness capable of providing aviation ground support to a variety of operational forces.

III. MARINE CORPS AIR STATION MIRAMAR

Camp Kearny–National Guard (1917-1920). U.S. military involvement in World War I led to major nationwide defense development, including Camp Kearny, an Army National Guard infantry training center. The Camp was located on Station in the region presently serving as the airfield. In May 1917, the U.S. government leased 8,000 acres on Linda Vista Mesa for the facility named for General Stephen Watts Kearney, who distinguished himself during the Mexican War. The name was later shortened from "Kearney" to "Kearny." The Camp was designed to accommodate 40,000 men and its facilities were comprised of 650 buildings including the base hospital complex, a warehouse district and a remount station designed to care for 10,000 cavalry horses and mules (Figure 2). Over 60,000 men received training here. Though an airfield had not been formally established, the first aviation exercise took place in 1918, when an Army aircraft landed on the Camp's parade ground. The Camp was officially closed and dismantled in 1920. A granite monument with a plaque was created to commemorate the 40th Division of the National Guard (A.E.F. of WWI), and placed on what is now MCAS Miramar airfield in 1928. The monument was destroyed in 1942, and the bronze plaque was sent to Camp Roberts. It was last identified at the 40th Infantry Division Headquarters building in Los Alamitos, CA (D. Boyer, personal communication, 2010).

Camp Holcomb/Elliot (1934-1944). In 1934, the Marine Corps rented 19,000 acres of diverse and rugged terrain east of Camp Kearny, to use for artillery, anti-aircraft, and machine gun training. The base was called Camp Holcomb after the then Commandant, Major-General Thomas Holcomb. The Camp consisted of a collection of semi-permanent buildings that intermittently housed two battalions of Marines.

Although the U.S. had proclaimed neutrality in the war in Europe, recommendations were made in September 1939 that the Fleet Marine Force acquire property for combat training. Land formally used as Camp Holcomb was chosen and in May 1941, roughly 19,000 acres were acquired through a declaration of taking. The base was designated Camp Elliott for Major -General Gorge F. Elliot, the Corps tenth Commandant. Construction on a completely new base began that year; the Marines occupied the Camp in January 1941, seven months before the U.S. entered World War II. The buildings were constructed on temporary standards and were designed to serve 14,800 men. By 1943, countless canvas tents had been hoisted to house an additional 8,000 Marines. Over the years, further land was acquired, expanding the Camp to about 26,000 acres. In an effort to consolidate after the war, all Marine training at Camp Elliot was transferred to Camp Pendleton in 1944. With this, the Navy took control of the base and for the remainder of the war used it as a training and distribution facility until 1946.
Following the war the property served a variety of temporary uses including use as the headquarters for the National Guard 251st Group as well as an illegal immigrant detention camp operated by the Immigration and Naturalization Service. With the onset of the Korean conflict, the Navy reactivated

Camp Elliot. It served as an auxiliary training center from 1951 to 1953 for additional recruits from NTC San Diego. In 1960, the Camp was decommissioned and was divided between NAS Miramar and the Air Force for the creation of the Atlas Missile test facility. Sycamore Annex was developed by General Dynamics under direction of the National Aeronautics and Space Administration (NASA) as a high security testing area used in the development of the Atlas and Centaur missiles. In 1966, the facility was transferred to NASA and by 1969 the site was determined surplus and title was transferred to the General Services Administration. In December 1972, the Sycamore Annex parcel was transferred to the Navy and incorporated in NAS Miramar.

Naval Auxiliary Air Station Camp Kearny (1943-1946). Although the Army's Camp Kearny was decommissioned in 1920, the mesa was not completely abandoned. During the interwar years the parade ground was occasionally used as an airstrip by both government and the private sector. In 1929, the Navy decided to use 1,000 acres for an experimental lighter-than-air-ship base. A mooring mast and accessories were installed in 1932, but following a series of disasters, the Navy abandoned plans to use dirigibles. In 1939, the Naval Air Station, San Diego paved a portion of the Camp Kearny parade ground to be used as an emergency landing strip.

Following the U.S. entry into World War II, a part of the First Marine Aircraft Wing was transferred to Camp Kearny at which time the runways were enlarged. Additional runways were built between 1940 and 1941; however training demands were such that even these were insufficient. In 1943, the Navy completed an extensive redesign and resurfacing of the airfield, and construction of associated facilities including taxi lanes, aprons and hangers. This new facility, at what is now considered "Main Station", was called Naval Auxiliary Air Station (NAAS) Camp Kearny with the principal charge of training pilots to fly multiengine aircraft.

Marine Corps Air Depot (1943-1946). Following the commission of NAAS Camp Kearny, the Marine Corps established the Marine Corps Aviation Base (MCAB) Kearny Mesa, sharing the airfield with NAAS, which was located to the south. Within six months MCAB was renamed Marine Corps Air Depot (MCAD) Miramar. Its primary purpose was to supply and house additional Marines from North Island. After the war, MCAD Miramar served as a separation center. In May 1, 1946, MCAD Miramar was decommissioned and merged with NAAS Camp Kearny and renamed Marine Corps Air Station Miramar (MCAS Miramar). One year later in June 1947, the Marines at MCAS Miramar were transferred to MCAS El Toro and the Station was then apportioned to the Navy.

Naval Air Station (1949-1997). Once the Marine air units moved to El Toro, the Station was taken over by the Navy and was again designated an auxiliary air station, known as NAAS Miramar. In an effort to enhance military preparedness, Congress passed the Woods Plan in 1949, appropriating funds for the development of a Master Jet Air Station at Miramar. Major construction and rehabilitation of the runways soon followed and on April 1, 1952, the site received the official designation Naval Air Station Miramar. By 1955, the Station housed nearly 400 jets, the principal fleet support air station of the Navy. In 1961, NAS Miramar acquired former Camp Elliot, nearly doubling its size. In December 1972, NASA transferred Sycamore Annex to the Navy, increasing the size of the Station to nearly what it is today.

Early in the Vietnam War, concerned with relatively low air-to-air kill ratios, the Naval Air Systems Command established a graduate-level school. In 1969, TOPGUN was founded at NAS Miramar to produce fighter crews highly trained in Air Combat Maneuvering. The Navy operated NAS Miramar until October, 1997 when the property was transferred to the Marines as a result of the Base Realignment and Closure Act of 1990, and the TOPGUN school was relocated to NAS Fallon.

MCAS Miramar (1997-present). Rather than close the Station, the 1993 and 1995 Base Realignment and Closure (BRAC) Commission made the decision to realign NAS Miramar to MCAS Miramar. The changeover officially occurred 1 October 1997 with the relocation of all Marine personnel, aircraft and equipment from MCAS Tustin and MCAS El Toro to MCAS Miramar. The Station is now a 24,000 acre installation, one of the largest in the vicinity, with a mission to maintain and operate facilities and provide services and material to support operations of a Marine Aircraft Wing. Currently MCAS Miramar supports the Third Marine Air Wing, whose mission is to provide combat-ready, expeditionary aviation force capable of short-notice, world-wide deployment to Marine Air Ground Task Force, fleet and unified commanders.

IV. MCRD SAN DIEGO

In 1916, Congress allocated funds for a Marine expeditionary base on shore and tidelands along the bay north of San Diego. General Pendleton, the first base commander, commissioned the Marine Advanced Expeditionary Base, San Diego, with the 5th Marine Brigade Headquarters in December 1921. The initial facilities included six barracks, a warehouse, and roads and walks. In 1923, the Marine Corps Recruit Depot for the Western United States was relocated to the base from Mare Island Naval Shipyards in Vallejo. The installation was renamed Marine Corps Base, Naval Operating Base, San Diego.

Because of budget cuts following World War I and the Great Depression, construction was halted in 1926, with the base approximately 60 percent complete. A hiatus continued until 1939. With the approach of World War II, the base began a rapid expansion. This included 27 new warehouses, plus new barracks, mess facilities, and other buildings. The administration and auditorium buildings were completed in 1943.

During World War II, recruit training became the most important function at the base. Various training schools were reduced in size or moved elsewhere to accommodate the expansion of the recruit training mission. The name of the base was changed to MCRD San Diego in 1948.

Training demands increased again during the Korean War, as President Truman ordered the Marine Reserves to mobilize in 1950 for quick deployment. Recruit strengths increased dramatically again during the Vietnam War, reaching 13,600 in February 1966. This led to the planning and construction of new permanent recruit barracks west of the parade ground.

V. MARINE CORPS AIR GROUND COMBAT CENTER TWENTYNINE PALMS

World War II and Condor Field. The advent of World War II prompted the military to look at the Twentynine Palms area to develop a training facility. Between 1939 and 1941 the United States initiated a massive effort to mobilize its resources in response to the escalating conflicts in Europe and the Pacific. As part of this effort, the Army, Navy, and USMC established dozens of new facilities in California to defend the west coast and train soldiers, sailors, and pilots for combat. In November 1941, shortly after passage of the Lend-Lease bill to aid Great Britain in fighting Nazi aggression, Secretary of War Henry L. Stimson granted the U.S. Army Corps of Engineers authority to establish a glider school on

the playa north of Twentynine Palms. Later that same month, the U.S. Army Corps of Engineers dispatched a surveying party to determine the best location for the new station. The engineers completed their survey by mid-December, and work on the facilities began shortly thereafter (Ludwig 1989).

A new glider school, officially known as Twentynine Palms Air Academy, was initially operated by a civilian firm that contracted with the Army to build, maintain, and operate the glider facility for the Army. The facility itself soon acquired the name of Condor Field. Initially, the Twentynine Palms Air Academy included both military and civilian administrators and instructors. In January 1942, the first class of 18 students arrived at Twentynine Palms for training. Shortly thereafter, the school intended to rotate classes of 24 people through the academy every 2 weeks. As the war progressed, however, it became clear that airborne missions traditionally flown by gliders were accomplished more safely and efficiently by paratroopers. By early 1943, the Army discontinued glider training at Twentynine Palms. In 1944, the U.S. Army Corps of Engineers began using Condor Field as a flight training school for powered aircraft, but the Army permanently abandoned the field that same year. Hard pressed to find flying facilities for operational training of fleet squadrons in southern California, the Navy petitioned the Army to transfer Condor Field to Navy control. In July 1943, the Navy Department officially established the Naval Auxiliary Air Station (NAAS) Twentynine Palms under the command of the Naval Air Center headquartered in San Diego. For approximately one year, the Navy used the facility for flight training, specializing in bombing and strafing (Coletta 1988). After the war ended in 1945, the NAAS Twentynine Palms, like many other auxiliary air stations, was taken off duty and placed on caretaker status (Ludwig 1989), although the main airfield was conveyed to San Bernardino County (US Army Corps of Engineers, St. Louis District 2000:2-5, 2-6).

Camp Detachment Marine Corps Training Center (1952-1957). Just as the Korean War was a test of the United States' containment policy, in many ways it was also a test of the rapidly growing U.S. defense industry. Although no nuclear weapons were employed, defense industry specialists scrambled to develop and deploy more accurate, long-range conventional weapons. As a result, during and immediately following the Korean War, the USMC found itself with new weapons and no facility large enough to house training activities. Both Camp Lejeune in North Carolina and Camp Pendleton on the southern California coast were too small to handle the influx of new sophisticated artillery and rockets being developed. The USMC began looking for a place large enough to handle weapons such as the improved 155mm guns, eight-inch howitzers, and new rockets and missiles. On August 20, 1952, the USMC officially acquired 935 square miles of desert near the town of Twentynine Palms, including the World War II-era Condor Field. Operated under the auspices of Camp Pendleton, the station was officially activated as "Camp Detachment, Marine Corps Training Center Twentynine Palms" by Post Order 343 from Headquarters Marine Barracks, Camp Pendleton. A few months after acquiring the station, construction on new facilities began (Informational Services Office 1968; Armed Services Press 1972).

In December 1952, Lieutenant Colonel Fredrick H. Scatling and approximately two dozen Marines comprising Camp Detachment, Marine Corps Training Center (MCTC), occupied the facilities at Condor Field. The primary duty of Camp Detachment, MCTC was to guard the facility while the civilian contractor completed the first phase of construction of the new base facilities and to scout out and establish ranges. As planned, the facility would consist of a main administration, residential, instructional, recreation area (Mainside), and several outlying areas, including the large firing ranges, a small arms firing and rifle range, and an ammunition storage area. Wells were dug at Surprise Spring that tapped its aquifer, which proved to be more than enough to supply the water needs of the base (Ludwig 1989).

The USMC envisioned Twentynine Palms as providing facilities for long-range field artillery, antiaircraft artillery, heavy gun tanks, guided missiles, and heavy artillery rockets. It was also intended for field firing exercises of units up to division and wing size. In March 1953, elements of the 12th Marine Regiment began exploring the vast new station and started practicing on the newly acquired range sites. Approximately 2,500 officers and men, including elements of the 155mm Gun Battalion and the 1st Anti-Aircraft Artillery (Automatic Weapons) (AAA AW) Battalion Force Troops left Camp Pendleton on March 18 and made the 145-vehicle-trek to the desert base. Once there, they began full-scale firing exercises with 105mm and 155mm howitzers (Ludwig 1989). The 1st AAA AW Battalion was the first unit permanently assigned to the new base. In August 1953, the battalion administration moved from Camp Pendleton to MCTC Twentynine Palms, and in early September, the soldiers moved into the new barracks. The following month, the 1st 155mm Gun Battalion moved from Camp Pendleton into a tent camp near Surprise Springs and a month later they too moved into barracks (Ludwig 1989).

Initially, the USMC planned to use the Twentynine Palms base to house and train only Camp Pendleton Force Troops units with long-range, indirect fire weapons. As the facilities became available during the year, however, the USMC opted to move four FMF Atlantic organizations with 80 officers and 887 enlisted men stationed at Camp Lejeune, North Carolina, to the base. The troops were transported through the Panama Canal to San Diego and then to Twentynine Palms.

By June 1954, units assigned permanently to MCTC Twentynine Palms included the Headquarters Battery Force Artillery; the 1st 155mm Gun Battalion; the 2nd 155mm Gun Battalion; the 1st 155 Howitzer Battalion; the 1st 8-inch Howitzer Battalion; the 1st AAA AW Battalion; the 2nd AAA AW Battalion; the 2nd 90mm AAA Gun Battalion; the 1st 75mm AAA Training Battalion; and the Combat Service Group Detachment. The Marines also began the development of other areas on the base, including a family housing area, a field training area (later called Camp Wilson), a small arms firing range, and an ammunition storage area. The small arms range complex was completed in 1955 and gradually expanded over time (Ludwig 1989).

Marine Corps Base (1957-1978). In late 1956, Congress appropriated $15 million for new construction at the base. On February 1, 1957, the USMC officially commissioned the facilities at Twentynine Palms as an independent base. Given the official name, Marine Corps Base (MCB), Twentynine Palms, the essential mission of the station remained the same: to provide the personnel, material, and services to support FMF units training there (Ludwig 1989). In the 1960s, the USMC moved one of their premier technical schools, the MCCES, to MCB Twentynine Palms. However, MCB Twentynine Palms essentially served as the Marines' artillery training base.

The new base status meant that new units were assigned to Twentynine Palms. By the end of 1958, in addition to the base headquarters and service personnel, tenants at MCB Twentynine Palms included headquarters company of force troops; the headquarters battery of the 1st Field Artillery Group; the 1st and 2nd 155mm Gun Batteries; the 3rd 155mm. Howitzer Battery; the 1st Heavy Artillery Rocket Battery; the 1st and 2nd 105mm Howitzer Batteries; the 3rd and 4th 8-Inch Howitzer Batteries; the headquarters battery of the AAA group; the 1st and 2nd AAA AW Battalions; the 1st Force Service Regiment; the Company D, 7th Engineer Battalion; the 5th Dental Company; the medical section (from the Naval Hospital, Camp Pendleton); the 1st and 2nd Medium Anti-Aircraft Missile Battalions; and the 1st 7mm AAA Battalion (Ludwig 1989).

In 1962, the USMC budget was increased by $67 million and its force enlarged to 190,000 (Millett 1980). Marines stationed at Twentynine Palms were sent to Florida during the Cuban Missile Crisis of 1962 (Kelley 1975). Although the operation lasted only weeks and the Marines soon returned to the desert, it

did presage the mass deployments that all but depopulated Twentynine Palms during the early years of the Vietnam War.

In late 1963, the USMC decided to move the MCCES battalion from the USMC recruit depot in San Diego to Twentynine Palms. Because of revolutionary advances in electronic communications technology, the MCCES program was the fastest growing training school in the USMC. For example, in 1962, 1,051 Marines graduated from the program and that number increased to 1,640 the following year. However, even these numbers were well short of the trained communications specialists needed by USMC units around the globe. As a training site, Twentynine Palms had several advantages over San Diego. Located near Lindbergh Field, training at San Diego was frequently interrupted by the noise of aircraft taking off and landing. In addition to freeing the school from aircraft noise, the remote location at Twentynine Palms meant that other atmospheric interference was minimized. Moreover, the open spaces at Twentynine Palms gave the school necessary room to grow (Ludwig 1989).

As the United States involvement in Vietnam increased, Marines from Twentynine Palms were sent overseas. In November 1964, the entire 1st Light Anti-Aircraft Missile (LAAM) Battalion, with its Hawk missiles, was secretly deployed to Vietnam. Approximately 600 Marines, along with a Navy doctor and eight corpsmen, were sent to provide air defense at Da Nang in south Vietnam. This was the first major unit at Twentynine Palms to be assigned to frontline duty. Over the next year, many Marines from Twentynine Palms were assigned to southeast Asia. As a result, the base population dropped dramatically during the early years of the Vietnam War. By 1967, however, this trend began to reverse as units and individuals completed their tours (Ludwig 1989:48-55).

To prepare Marines deploying to Vietnam, the USMC initiated specialized training that simulated battlefield conditions in that country. An example was an exercise involving more than 2,000 Marine reservists called “Operation Sidewinder”. Held during the summer of 1966, the objective of Operation Sidewinder was to enhance the operational readiness of the Marine reserve units by confronting them with conditions found in Vietnam. In addition to the enemy army and heat, the Marines were faced with simulated booby traps and civil insurrection. Additionally, fighter jets attacked ground troops. The exercise lasted only 3 days, but comprised Marines from as far away as Indiana and included the use of tanks, artillery, and Hawk missiles. That same summer, the first USMC Redeye Missile School began teaching classes at Twentynine Palms. The Redeye Missile School was a handheld, heat-seeking antiaircraft missile used by ground troops as a support weapon. This school was located at Twentynine Palms until the 1970s (Ludwig 1989; JRP Historical Consulting 1999).

In January 1966, Secretary of Defense Robert McNamara authorized plans to increase the USMC by 85,200 to a wartime level of 278,000; approximately 25,000 more than during the height of the Korean War (Millet 1980). By the late 1960s and early 1970s, the policy of “Vietnamization” of the war signaled a gradual phasing out of United States Marine forces and a subsequent expansion of Marine facilities stateside, including MCB Twentynine Palms. By the mid-1970s, the war in Vietnam was winding down and manning levels at MCB Twentynine Palms recovered from the mass deployment lows of the 1960s. However, with the exception of the addition of the MCCES, the mission of the base remained essentially as it was since 1953:

To provide the personnel, material, and services for the maintenance, training, and support of Marine Corps Base forces as assigned to Force Troops, Fleet Marine Force, Pacific; to provide medical, dental, and surgical facilities for force units and augment division medical facilities; to provide formal school training for personnel in the field of Communications-Electronics; to support operations of the Marine

Air Reserve Training Command; and to perform such additional functions as directed by the Commandant of the Marine Corps.

Marine Corps Air Ground Combat Training Center (1978-1979). In 1974, Lieutenant General Louis H. Wilson (later the 26th Commandant of the USMC) suggested using the Twentynine Palms facility as a combined arms training center where Marines could conduct training using complete and realistic combat simulations, including infantry, artillery, and air power. On October 1, 1978, the USMC redesignated MCB Twentynine Palms as the Marine Corps Air Ground Combat Training Center, Twentynine Palms. The purpose of the Marine Corps Air Ground Combat Training Center was to conduct extensive realistic battlefield training with combined arms (air, artillery, and infantry) for units of both the Atlantic and Pacific FMF. Marines would, thus, be able to see and gain an appreciation of the effectiveness of every form of support necessary in a real combat situation. One of the main components of the new training concept was integrating air operations into the exercises, something that had happened only to a limited extent at Twentynine Palms during earlier specialized training exercises, such as Operation Sidewinder. To accommodate the training aircraft, in 1976 the USMC initiated construction on an EAF near Camp Wilson. Completed in 1978, the facility consisted of an aluminum plate runway, temporary hangars, and other associated facilities. By mid-1978, the center was ready to hold its first combined arms exercise (CAX). These early exercises involved a 12-day deployment with a structured 3-day CAX.

Marine Corps Air Ground Combat Center (1979-Present). Its stated mission "to develop, administer, and evaluate the Marine Corps' Combined Arms Training Program," the objectives of the CAX program were to exercise and evaluate active duty and reserve FMF units and MAGTFs in command, control, and coordination of combined arms with a maneuver warfare live fire environment.

On April 30, 1980, the USMC activated the Combined Arms Command at the Combat Center to provide a command headquarters for the FMF, Pacific units at the base. The following May, the headquarters nucleus of the 7th Marine Amphibious Brigade moved to the Combat Center. This brigade was responsible for training and planning for the deployment and employment of assigned forces associated with the Near Term Prepositioning Ships Program. In December 1981, the headquarters of the 27th Marine Regiment was reactivated at the Combat Center to serve as the ground combat element of the 7th Marine Amphibious Brigade. At the same time, the USMC deactivated the Combined Arms Command.

From the early 1980s until the end of the Cold War era, the Combat Center continued to grow steadily. Today, the Combat Center continues as the USMC combined arms training center. In addition to fulfilling their training mission, the Marines at the Combat Center remain ready to deploy overseas as needed. In 1990 and 1991, the DoD deployed nearly 8,000 Marines from the Combat Center in support of Operations Desert Shield and Desert Storm. In 1993, the USMC continued its tradition of innovative training when it established the Marine Air Ground Task Force/Expeditionary Training Center at the Combat Center to help the USMC and other services to prepare for changes in the battlefield involving low-intensity conflicts. In October 2000, the Marine Corps realigned the Command at the Combat Center to the MAGTFTC.

VI. MWTC BRIDGEPORT

Marine Corps use of the area began in 1951, when Camp Pendleton activated the Cold Weather Training Battalion, Provisional Staging Regiment, Training and Replacement Command in Idyllwild, California.

Two weeks later, the U.S. Marine Corps (USMC) re-designated the training camp as the Cold Weather Battalion, Staging Regiment, Training and Replacement Command, Camp Pendleton, California, and relocated it to Pickel Meadow. The prime objective of the camp was cold weather training for Korea.

Original military construction at Pickel Meadow consisted of temporary buildings and 50 tents for housing. The facilities included a mess hall and various converted Quonset huts. In May of 1952, the Marine Corps re-designated Pickel Meadow as Cold Weather Battalion, Bridgeport, California, Marine Barracks, Camp Pendleton. The same year, the Seventh Engineer Battalion Fleet Marine Forces constructed permanent buildings to replace the older, temporary structures. Although a number of name changes occurred in the 1950s, by 1963, the facility was known as the Marine Corps Mountain Warfare Training Center, Bridgeport, California, and was operated on a year-round basis. The facility was placed on caretaker status in 1967 and reactivated to a full-time command on 19 May 1976.

VII. MARINE CORPS LOGISTICS BASE BARSTOW

MCLB Barstow, located 3 miles east of the city of Barstow, was created as a Navy supply depot in mid-1942. This inland location was selected on the basis that it would be more secure from hostile attacks and sabotage, was near a major railway system and roads, and there was sufficient land for growth of the facility. The depot was transferred to the Marine Corps at the end of December of that year as a storage facility annex to the Marine Corps Supply Depot in San Francisco (Wilson 1994:73). As World War II progressed, the facility became a major inland supply depot for the Marine Corps operating in the Pacific Theater.

After World War II, the base continued to expand while many other military facilities were demobilizing. In October of 1946 an approximately 1,900-acre parcel at Yermo, 7 miles northeast of the Nebo main base, was annexed from the U.S. Army. The repair and maintenance facilities were added during the Korean Conflict of the early 1950s, which made the base the center for all Marine Corps logistics activities west of the Mississippi River, and throughout the Pacific Ocean and the Far East (Manley 1996:17; GlobalSecurity.org 2002). Additional housing units for personnel were also added at this time. According to Wilson (1976:74), a significant number of Native Americans were recruited from Indian Reservations in the southwest to work on the base during the Korean War era.

In 1960, a large repair facility was constructed at the Yermo section of the base. Additional land to create a buffer around the Rifle Range was acquired and major structural improvements were made to the housing facilities in the 1960s and 1970s (Manley 1996:17). During the Vietnam War era, the base permanently employed approximately 700 military and 2,100 civilian personnel (Wilson 1994:74).

Since the end of the Vietnam War, the base has continued to provide, maintain, and distribute equipment and supplies. The facility also provides logistic support for Fort Irwin. According to GlobalSecurity.org (2002), the number of active duty military personnel (Navy and Marines) had declined to approximately 500, while civilian employees increased to about 2,500 at the beginning of the 21st century.

Recently, there has been a significant decline in both active duty military personnel and civilian employees at MCLB Barstow. At present, there are approximately 188 military and about 1,422 civilian personnel working at the base (Manuel Joia, personal communication 2005). The number of Marines and their families living on base has likewise declined. Much of the extensive housing on the west side of

the base has been demolished, in part because it is no longer needed with the reduction of personnel. Other factors that have led to the removal of these housing units include the age of the facilities (1950s), noncompliance with current building codes, earthquake standards, and hazardous materials standards for asbestos and lead (Manuel Joia, personal communication 2005).

VIII. MARINE CORPS AIR STATION YUMA

Marine Corps Air Station (MCAS) Yuma is located in the extreme southwestern corner of Arizona, at the southeastern edge of the City of Yuma. Not including the extensive surrounding gunnery and bombing ranges that the base controls, the MCAS Yuma base proper covers about 3,000 acres. The main cantonment, including flightline, personnel support, and housing facilities, is located on the eastern half of the reservation, with access points off of Avenue 3E South, south of East 32nd Street. Roughly bisecting the base is the 13,000-foot main runway, which runs at a northeast/southwest diagonal. Two shorter runways, one east/west and the other north/south, are shared with the Yuma County International Airport, whose facilities are located on the northwest corner of the reservation. According to the current Internet Naval Facilities Assets Data Store (INFADS) for MCAS Yuma, there are approximately 610 numbered buildings and structures on MCAS Yuma, the vast majority of which – about 490 – date to the Cold War Era (1946-1989), the period covered by this study.

The site of present day MCAS Yuma first served military aviators when the federal government leased 640-acre "Fly Field" from Yuma County in 1928, at a time when aviation was still in its formative years. The field was used sporadically until 1941 when the Civil Aeronautics Administration installed permanent runways. With the coming of World War II, Yuma Army Air Field (AAF) was rapidly erected with a mixture of mostly semi-permanent and temporary buildings for the purpose of training pilots for the duration of the war. It quickly became one of the Army's busiest flight bases. Established in May 1942 and first operational in early 1943, Yuma AAF was an advanced flying school, initially training fighter pilots and later adding instruction in bombing and gunnery techniques for B-17 Flying Fortresses. In 1945, B-25 Billy Mitchell bombers conducted overcast bombing exercises. The base was deactivated later that year, and civilian aviation operations resumed at the air field. By the end of the war, the air base had become a self-contained city, consisting of hundreds of buildings along the flightline and within the general cantonment area.

Postwar Period of Aerial Inactivity (1946-1951). At the end of World War II, the Army Air Force maintained some 1,811 installations in the continental United States. Shortly after the end of hostilities, the Air Force initiated a process of consolidation, inactivation, and base closure, such that by 1947, when the National Security Act designated the Air Force as a separate branch of the armed forces, there were only 115 active, major Air Force bases scattered throughout the country. Yuma Army Air Field was a casualty of rapid demobilization, as training activities ceased in 1945 and the installation was placed in temporary caretaker status. Physical control of the base passed in quick succession from the U.S. Army Corps of Engineers (ACOE) to the War Assets Administration, and finally to the U.S. Bureau of Reclamation (USBR). Over the next six years, until the Air Force reactivated the old army air field as a full-fledged training base, the physical infrastructure was systematically dismantled, transforming the "attractive, well-kept city within itself" into a "wasteland of sand and empty concrete slabs."

The War Department, predecessor to the Department of Defense, retained possession of the airfield throughout 1946, citing its potential for future use as a training facility. Various parties expressed

interest in using the old airfield facilities. The Yuma County Board of Supervisors requested that the west portion of the field, including a number of hangars and county-owned buildings on the site, be put into service as a civilian and commercial airport. The War Department agreed, and issued the county a lease to that effect. In early 1946, USBR took temporary possession of housing and office space at the airfield, which the bureau used as a base of operations for the Yuma Mesa unit of the Gila Irrigation Project. At about the same time, a local contractor suggested converting 200 wartime barracks into apartment buildings to provide low-cost housing for returning World War II veterans.

The use of the installation by USBR and Yuma County, as well as various adaptive reuses of the building stock, came to shape the post-war fate of Yuma AAF as a shadow of its former self. In September 1946, the War Department declared the facility surplus, and the one square-mile Fly Field portion reverted to the county for use as a local airport. The county already had already secured a 45-year lease from the Department of Interior in 1928, but in 1942 the county granted a suspension of the lease until the War Department declared the property in excess to its needs, which happened with this surplus declaration.

One year later, in September 1947, the War Assets Administration (WAA) formally transferred control of Yuma AAF and all of its real property to USBR (WAA had acquired the base from ACOE in the previous July). Since taking temporary possession of several buildings in early 1946, USBR had established headquarters for the Lower Colorado River District – which was responsible for administering the large-scale Yuma, Gila, and All-American Canal irrigation projects – at Yuma AAF. The bureau allowed the county to continue operating the airport under permit, using the runways and existing facilities on the northwestern corner of the base (today's Yuma County International Airport), and retained for itself a number of shops, offices, warehouses, and dwellings on the eastern half of the base (on the site of the present-day MCAS Yuma cantonment).

Over the next four years, USBR steadily disposed of the vast majority of remaining buildings on base. It first relocated more than 200 World War II-era barracks to lands opened up by the bureau's Yuma and Gila reclamation projects. Many administrative buildings were moved and converted into church, school, and other civic buildings in the Yuma area. The bureau also planned to turn the old hospital area for use as a junior college. As late as spring 1951, on the eve of YAAF's reactivation, USBR was still salvaging war-time buildings, converting several of them into residences for use in the Welton Government Camp, a "new town" the bureau was developing outside of Yuma. Only a few of the temporary wartime buildings survived intact and in place; most of these were occupied by the Bureau.

Yuma (Vincent) Air Force Base (1951-1959). On July 16, 1947, Congress passed the National Security Act, authorizing creation of the United Stated Air Force as an independent service branch. The Army Air Force had been preparing for this transition even as it was dismantling its wartime air defense system. One of the AAF's lasting contributions to the modern Air Force was its structural reorganization in March 1946, which disestablished the World War II-era Continental Air Forces and created three major operational commands: Strategic Air Command (SAC), responsible for delivering the nation's nuclear arsenal through land-based strategic bombers and intercontinental ballistic missiles; Tactical Air Command (TAC), in charge of organizing, equipping, and training deployable forces; and Air Defense Command (ADC), responsible for deterring and countering air attacks of the continental United States. Yuma Air Force Base, established in 1951 on the site of the old Yuma Army Airfield, was a component of the ADC and represented one of dozens of Air Force installations created during a frenzied period of expansion in the early Cold War Era.

The reversal of postwar downsizing and subsequent expansion of Air Force installations in the late 1940s and 1950s was an outgrowth of dramatic shifts in the socio-political landscape. Events of World War II changed the international balance of power, creating an ideological struggle that quickly manifested itself as the Cold War. The perceived threat of communism necessitated the adoption of a more aggressive American stance in the international arena. In 1947, President Truman formally set the stage for the Cold War confrontation between the Soviet Union and the United States with the Truman Doctrine, condemning totalitarianism and its threat to the security of the United States, and initiating an enduring foreign policy of "containment" designed to prevent expansion of the Soviet bloc. The two superpowers embarked on an unbridled conventional and nuclear arms race characterized by action and reaction to gain economic, military, and technological superiority. At the dawn of the Cold War, the newly-created Air Force, having inherited the decimated remains of the Army Air Forces, faced formidable challenges in building up its forces. Congress was intent on controlling spending and placed severe limitations on military funding. In 1947, for example, the Truman administration's Air Policy Commission recommended expanding the number of Air Force combat groups over a five-year period from 55 to 70; Congress blocked the recommendation, instead cutting the force to 48 groups. Within this atmosphere of restricted budgets, development of Air Force facilities was initially slow. Most funding was channeled toward maintaining existing resources, rather than developing new ones.

Several key developments in 1950 abruptly changed this situation, and ushered in a period of unprecedented Air Force growth. In the spring of that year, the National Security Council issued NSC-68, a policy document recommending general military rearmament. The report evaluated the military strength of the Soviet Union in comparison to the United States, and drew the conclusion that by 1954 the Soviet Union would possess conventional and nuclear forces capable of winning a war in Europe. The release of NSC-68 coincided almost exactly with the outbreak of the Korean War. At the end of World War II, the Soviet Union and the United States divided the Korean Peninsula along the 38th parallel; the Soviet-backed Korean People's Democratic Republic lay north of this dividing line, and the Republic of South Korea was founded in 1949 with American support. In June 1950, North Korean ground and air forces crossed the 38th parallel in a surprise invasion. The U.S. and a coalition of nations under the auspices of the United Nations entered the conflict to defend South Korea. What followed was a three-year engagement ending with a cease-fire that reestablished the previous division of the peninsula.

On the advice of NSC-68 and in the wake of renewed hostilities, in the early 1950s the Department of Defense began a large-scale expansion of both nuclear and conventional forces. The Air Force was a major beneficiary of this shift in policy. From 1950 to 1960, the number of Strategic Air Command aircraft more than tripled, increasing from 962 to 2,992, and the number of major Air Force bases in the continental United States had grown from 115 at the end of the war to 162 in 1956. Like Yuma AFB, most were World War II bases that were reactivated and subsequently rebuilt.

During the late 1940s and early 1950s, the Air Installations Board, the Air Force entity responsible for base site selection and development, designed a set of criteria for permanent bases. These criteria called for bases to be Federally-owned, near construction, maintenance, and logistical services, and near civilian communities which provide additional housing and services. Permanent base sites typically had to have at least 5,000 acres of available land, and topography should be reasonably level and able to accommodate a 15,000 foot runway. Also, when feasible, guidelines strongly favored reactivating existing bases rather than building new ones from scratch.

Air Force officials and planners visited the old Yuma Army Airfield on several occasions between the summer of 1950 and spring of 1951 to consider it as a candidate for a weapons training center. Survey teams consisting of Air Force representatives from Washington, D.C., the Western Area Defense Force, and Luke Field (Arizona) reported favorably, citing Yuma's excellent year-round flying weather, the size and quality of the runways, and its strategic location "as a secure, in-land base from which to launch an aerial defense of the [west] coast." Its geographical location was also advantageous for its proximity to other Arizona military establishments, such as the Ajo-Gila gunnery range, situated east of Yuma between U.S. 80 (today's Interstate 10) and the Mexican Border, and Luke AFB, a major jet airbase near Phoenix. On May 15, 1951, the Air Force announced its plans to reactivate the airfield as Yuma Air Force Base.

Yuma AFB, officially established on July 7, 1951, was a component of the Air Defense Command, the chief mission of which was "the preparation for and execution of defense operations against air attack on the continental United States." The history of Yuma AFB as a weapons training center began in July 1951, when Detachment One of the First Fighter-Interceptor Wing arrived from George AFB in Victorville, California. The unit was redesignated the 4750th Air Base Squadron upon arrival. The 4750th initially consisted of four officers and 112 airmen and was under the command of Lt. Col. Wilson Edward, a gunnery expert who had previously served as commander of Luke Field and the gunnery school at Ajo. The squadron's assignment was to provide weapons proficiency training for Air Defense Command fighter-interceptor squadrons, who typically deployed to the base in four-week rotations. At first only Western Area Defense force units trained at the base, but in June 1952 the installation began hosting jet fighter units from across the country. Visiting squadrons performed training maneuvers and exercises on the expansive Ajo-Gila gunnery range, the western portion of the larger Luke AFB bombing and gunnery range which extended some 170 miles southeast from Yuma along the Mexican border.

While the gunnery range, runway facilities, and year-round flying conditions at Yuma AFB were considered among the best in country, the early visiting pilots and crews (as well as permanently stationed personnel) were met with living and working conditions that could be described as primitive. For the first few months of operation, visiting units had to provide their own ammunition, targets, and tow aircraft, although this situation was soon remedied. With the exception of some basic infrastructural improvements, though, it appears that there was no new construction throughout 1951 and well into 1952; the "abandoned wasteland" described by Air Force survey parties remained just that. Because only a few buildings were left from the war, personnel were forced to endure the desert conditions in "facilities that were well past being acceptable," in the words of one early-day airman, including repair shops that were open to the elements and living quarters consisting of rows of canvas tents.

For the first two-and-a-half years of operations, the proficiency training programs for ADC combat units focused on conventional gunnery tactics using a variety of jet aircraft outfitted with 50-calibre machine guns. The visiting units brought their own aircraft and flight crews, and the 4750th supplied instructors and maintenance and personnel support facilities. From the beginning, the base was a constant hive of activity, hosting an ever-increasing stream of training units. Growth of the base, in terms of its stature within the ADC and the greater Air Force structure, can be measured by a rapid series of promotions. In June 1952, less than one year after the base became operational, the 4750th Air Base Squadron was redesignated 4750th Training Group (Air Defense). In September 1953 the Group was upgraded to 4750th Air Defense Wing (Weapons) with two subordinate Groups and four new squadrons (two under each Group). On August 24, 1954, one year after the 4750th became a Wing and three years after the air base was established, the Air Force upgraded Yuma AFB from temporary to permanent status.

By early 1953 Yuma AFB had begun to reap the benefits of multi-million dollar allotments for improvements and new construction. At Yuma, like other Air Force bases nationwide, building projects were handled by Army Corps of Engineers district offices, which let design and construction contracts to local architectural and engineering firms.

Among the first improvement projects at Yuma AFB was rehabilitation of the existing 900-man mess hall, begun early in 1952, and construction of two inert materials storehouses later that year. Early in 1953 the Army Corps of Engineers announced a $1.8 million building program consisting of 14 proposed projects. By this time there were more than 1,000 airmen permanently stationed at the base (not to mention the constant flow of transient air crews that required temporary billeting), so many of the projects were for personnel support facilities. These included dormitory quarters for 423 airmen, bachelor officers' quarters, an officers' mess, and a recreation building. Construction projects related to mission support included ammunition storage igloos, a firing-in butt, a jet fuel storage facility, a UHF direction finding facility, an ordnance repair shop, and an A.I.O. warehouse.

Another major component of the building program was an upgrade to the runway and taxiway system. The rapidly advancing state of jet aircraft engine and airframe development during the postwar period resulted in larger, heavier, and faster aircraft, which required longer and more durable runways. Yuma AFB's existing facilities consisted of three asphaltic concrete runways, all of which were designed and built to handle conventional, propeller-driven aircraft: the 6,150- foot east/west runway (Runway No. 1); the 6,667-foot northeast/southwest runway (No. 2); and the 5,303-foot north-south runway (No. 3). In addition, there were nine taxiways and several concrete anchorage areas. The Army Corps of Engineers let a contract to Quinton Engineers, Ltd. (Los Angeles) to extend the northeast/southwest runway 2,000 feet to the southwest, and to build additional taxiway connections and aprons.29 Preparations for the job began as early as the summer of 1952, when Yuma County made plans to purchase 120 acres of "raw desert land" on the southwest side of the base with the intent of transferring title to the Air Force. Construction commenced in 1953, once the land acquisition had been finalized, and was completed in the summer of 1954.

By the end of 1953, Yuma AFB had reached several milestones – and with it a certain level of maturity. The ongoing construction program to restore base facilities and infrastructure was well underway, the 4750th Air Defense Wing had grown to include six squadrons with a total strength of nearly 1,300 personnel, and the base had just hosted the first Air Defense Command Gunnery Weapons Meet, drawing the nation's premiere fighter-interceptor units for a week of aerial competition. The end of 1953 also marked a major turning point in the training mission at Yuma AFB, as the 4750th Air Defense Wing transitioned from conventional gunnery methods and techniques to the next generation of aerial combat weaponry – air-to-air rocketry.

The rocketry proficiency training program at Yuma AFB, the first of its kind in the world, was developed under the direction of 4750th Air Defense Wing Commander Colonel Robert F. Worley. Because the technology was still in its infancy, during the summer of 1953 the Standardization and Development Section (which later became the 4750th Test Squadron) was created to develop, test, and implement air-to-air rocket combat techniques. The first rocket used was the 2.75-inch (diameter) folding-fin "Mighty Mouse," capable of downing the largest bombers of the day with a single hit. The arsenal was later augmented with the Falcon GAR-1 and nuclear-capable MB-1 rockets. The rockets were mounted in clusters to three different types of swift-climbing, all-weather jet interceptors: the Lockheed F-94C *Starfire*, the North American F-86D *Sabrejet*, and the Northrop F-89D *Scorpion*. The mission of the

4750th Wing remained essentially the same in this new era of air-to-air rocketry: to develop and conduct a weapons training program for Air Defense Command fighter-interceptor squadrons for the purpose of warding off the attack of any aggressor aircraft. Over the course of its relatively brief stay in Yuma, the 4750th Air Defense Wing developed and implemented many techniques in the field of enemy aircraft interception that became mainstays of modern air defense practices The rocketry training regimen was similar in many respects to the gunnery program that preceded it. ADC units from throughout the country, equipped with their own planes and ground crews, arrived to participate in the 30-day program. The instructors were assigned to training squadrons based at Yuma, and were among the Air Force's best jet pilots (many of whom had served in Korea). Yuma AFB also provided maintenance and personnel support facilities, and "live-fire" operations were conducted over the Luke AFB gunnery range east and southeast of Yuma, the only over-land Air Force range expansive enough to handle this type of exercise.

Despite these similarities, the rocketry training program, not surprisingly, was also much more complex than the conventional gunnery program. Even before climbing into the cockpit, pilots were required to complete an intensive two-week curriculum of classroom and simulator training. The first simulator, patterned after the controls of the F-86D *Sabrejet*, was christened in early 1954 on the eve of rocketry training operations and represented the current state-of-the-art in terms of replicating conditions of real-time intercept missions. Advances in instrumentation allowed the simulator to duplicate the smooth movements of a plane in actual flight; it could also be programmed in real time to simulate changes in weather, battle damage, or equipment malfunctions. A second flight simulator, based on the Northrop F-89H all-weather radar intercept and fire-control system, was installed at the air base in 1956. One of two such trainers in operation at the time, it could simulate the firing of a missile and reproduce the controls, sights, sounds, and movements of an actual aircraft. With these instruments, entire sorties – from take-off to engagement and intercept of enemy aircraft – could be flown without placing the pilot or his aircraft in any real danger.

Actual live-fire exercises were conducted during the second two-week training period. The Yuma-based 17th Tow Target Squadron provided radar-reflective banner targets dragged thousands of feet behind huge jet bombers such as the B-45 *Tornado* and the B-57 *Canberra*. The bombers flew circuitous patterns around the range at altitudes of 20,000 to 50,000 feet. In later years, jet-propelled, radar-controlled "Firebee" target drones provided by the 4750th Drone Squadron were introduced. Ground-based radar crews were responsible for identifying the target and directing their aircraft into firing position. Once in position, the aircraft's radar established contact ("locked on") with the target (hopefully not the tow craft), and the pilot followed his instruments to engage and fire upon the "enemy." The unarmed practice rockets then impacted the target leaving an ink mark as evidence of the hit.

The ground-based radar controllers also took part of the weapons proficiency program, and deployed to Yuma AFB to train in concert with their squadron's flight and maintenance crews. The radar crews participating in the 30-day course came from their respective Aircraft Control & Warning (AC&W) units, which collectively comprised the nation's radar defense network. Radar-assisted fire control represented a major advancement in fighter-interceptor practices because air-to-air combat operations could now proceed in any weather conditions, day or night. Because the radar could "see" the enemy, it was not necessary for the aircraft's pilot to actually establish visual contact with the target. The operations building located on Yuma AFB grounds was otherwise nondescript, but housed a series of state-of-the-art radar scopes and was surrounded by several large radar antennas.

The first ADC tactical unit to participate in the new program was the 58th Fighter Interceptor Squadron from Otis Air Force Base in Falmouth, Massachusetts, which arrived at Yuma AFB on February 2, 1954. The 4750th Wing's air-to-air rocketry mission at Yuma AFB continued to expand at a rapid pace, such that by the middle of 1955 the base could handle four deployed ADC fighter-interceptor units simultaneously. At its operational peak in the late 1950s, as many as 30 visiting units rotated through the base each year.

In June 1954, Yuma AFB hosted the world's first air-to-air rocketry firing meet. Four teams from Air Defense Command and Air Training Command were invited to compete, and observers from USAF bases around the world, as well as representatives from the U.S. Navy, Royal Canadian Air Force, and Canada's Air Defense Command, were in attendance. The air base hosted the Air Force World-Wide Rocketry competition again in 1955 and 1956. Also tenanted at Yuma AFB during this period was the 864th Aircraft Control and Warning (AC&W) Squadron, activated in August 1955. Operating within the 27th Air Division area of responsibility, which covered the southern portions of California and Nevada and the western edge of Arizona, the 864th was one of many similar Air Force radar surveillance units responsible for detecting and directing the interception of enemy aircraft encroaching the continental United States. In 1948, the Air Force began developing a comprehensive AC&W network, which was planned to consist of 85 radar stations and 11 command and control centers nationwide. Construction of the control centers and AC&W radar sites progressed in several phases throughout the 1950s and into the 1960s. In 1954 a Combat Operations Center at Ent AFB, Colorado, was completed to coordinate the system of AC&W units. The 864th Squadron at Yuma AFB commenced operations in September 1956, and was one of twenty stations developed during the second phase of the Air Force Mobile Radar Program, the first phase of which began in 1952. The purpose of the program was to provide protection to the six SAC bases and to augment the permanent radar network of 75 AC&W stations, completed in 1952. The 864th mobile station was located in a secured facility on Yuma AFB and utilized AN/MPS-7 and AN/MPS-14 heavy radar units.

Following its establishment as a permanent facility and inauguration of its new rocketry training program, Yuma AFB entered its next phase of construction that provided much needed additional support facilities for the air crews, ground radar controllers, and maintenance personnel of the ADC interceptor units, as well as personnel permanently stationed at the base. Construction activities peaked between 1954 and 1956, during which time the base received multi-million dollar annual appropriations. Major construction projects that supported the base's operational mission included a simulator training building, altitude chamber building, operations and administration buildings for several tenant squadrons, rocket warhead handling shop, ammunition storage magazines, parachute packing and repair facility, communications facilities, expansion to the base photography laboratory, aircraft and armament shops, and a new control tower. Runway-taxiway work included resurfacing and installation of additional lighting. New personnel support buildings included a base exchange and auditorium, but the focus was on providing crucial housing for transient and permanent personnel and their dependents. Several two- and three-story airmen's and officer's barracks were erected, and the Air Force acquired 80 acres of additional land on the south side of the base to build 320 two- and three-bedroom Capehart housing units.

In the fall of 1956, Yuma AFB was renamed "Vincent Air Force Base," in honor of Brigadier General Clinton D. Vincent who died at Ent Air Force Base in Colorado on July 5, 1955. General Vincent, who served with the ADC from 1949 to 1955, was instrumental in establishing Yuma AFB as an Air Force weapons training center. Vincent AFB was officially dedicated at ceremony on October 12, 1956.

By the end of the 1950s, Yuma AFB was a fully functional air base, home to 12 squadrons and four tenant units comprising approximately 3,000 airmen and officers. With a physical plant valued in the millions of dollars, it was a far cry from the abandoned, desolate air field that the Air Force first occupied less than ten years earlier. Nevertheless, in late 1957 the Air Force announced its intentions to relinquish control of the air base and transfer it to the Department of the Navy. There were several reasons for the move, including interdepartmental efforts to economize and reduce new airfield construction costs, but the principal factor was the Air Force's policy decision to transfer all aspects of its weapons training program to over-water ranges. Modern interceptor jet aircraft and their air-to-air rockets were simply too fast to safely conduct live-fire exercises over inland ranges.

The Air Force began vacating Yuma AFB in late 1958, about the same time that a small advance contingent of approximately 20 military and civilian personnel from Marine Corps Auxiliary Air Station Mojave (California) arrived. Under a joint tenancy agreement between the Navy and the Air Force, the Air Force retained operational control of the range and facilities and the Marine Corps began to plan and implement the phasing-in of Marine personnel, supplies, and equipment. The base was officially transferred from the Air Force to the Navy on January 1, 1959, but the 4750th Air Defense Wing remained until the summer of 1959, at which time it completed its weapons proficiency training mission. The wing moved to its new home at MacDill AFB, Florida, thus drawing to a close the era of Air Force aviation at the Yuma air base.

Marine Corps Auxiliary Air Station, Yuma (1959-1962). In January 1959, Marine Corps Auxiliary Air Station (MCAAS), Yuma, Vincent Field, became the Navy's newest weapons training center, specializing in air-to-air and air-to-ground gunnery exercises.48 The Department of the Navy had expressed interest in acquiring the air base as early as 1957, just as the Air Force announced its intention to leave Yuma. With the move, the Navy inherited a fully-functional airbase, complete with flightline, operational support, and personnel support facilities.

The installation was also lauded for its ideal flying conditions and extensive inland ranges, which by this time covered an area of over three million acres across expanses of southern Arizona and California – making it the largest complex of its kind in the Navy establishment. MCAAS Yuma shared these ranges with other with nearby military flight bases, principally Auxiliary Landing Field (ALF) El Centro, California, and the Air Force Training Center at Luke AFB near Phoenix.

Under MCAAS Yuma's direct control was the massive Gila Bend range, as it was known at the time. The Marine Corps acquired this range, which extended east and southeast of Yuma, as part of the Air Force transfer in 1959. Contained within the Gila Bend range were the new Instrumented Special Weapons Delivery Range and a 110-mile long supersonic gunnery range that Yuma shared with Luke AFB. MCAAS Yuma squadrons also had access to target complexes at ALF El Centro.

MCAAS Yuma become a tactical training base for squadrons of the 3rd Marine Aircraft Wing (MAW), which had established headquarters at MCAS El Toro in 1955. The expressed mission of MCAAS Yuma was "to make available training facilities and to support operations for the Naval and Marine Air Arms in the Pacific Fleet."51 In practice this meant that flight training and aerial gunnery operations were the principal activities at the base, not unlike the pre-rocket days of the Air Force's tenure in the early 1950s. The first permanent occupant of the new Marine Corps flight base was a reinforced air group, comprised of fighter and attack type aircraft, which had transferred from MCAAS Mojave (the Mojave air base was decommissioned following the move).

The MCAAS Yuma facility also supported readiness training operations for deployed squadrons of Fleet Navy and Marine Forces, primarily from the west coast, which visited the base for durations of one to several weeks. Continuing practices established during the Yuma AFB era, each visiting squadron's flight, radar, and ground crews deployed and trained together as a single unit. The curriculum included classroom and simulator training prior to actual aerial operations. Aircraft deployed to the air station included nearly every type of intercept and attack jet in use at the time, including the F8U *Crusader*, FJ4B *Fury*, and F4D *Skyray*, but most notably the Douglas-designed A4D *Skyhawk*, the mainstay of Marine and Naval aviation from the mid-1950s through the Vietnam conflict. Beginning in the early 1960s, the McDonnell Douglas F-4 *Phantom II*, "one of the finest air weapons ever used by the Navy and Marine Corps," entered service and became a regular visitor to the Yuma air base.

Flight operations commenced at MCAAS Yuma in April 1959 with the arrival of Marine Fighter Squadron 323, the "Death Rattlers," which conducted two weeks of gunnery practice there. The base also supported training in air-to-ground strafing and bombing, field carrier landing practices, and radar-assisted intercept techniques, and was soon conducting as many as 750 training flights daily, logging a total of 137,00 take-offs and landings in 1960. While the air base was designed to handle six air squadrons simultaneously, in February 1961 the installation was stretched to its operational limits when six Navy and three Marine units, comprising 113 aircraft and nearly 1,100 personnel, deployed for training during the same week. In December 1959, the base also hosted the annual Air Weapons Meet, nicknamed "Operation Top Gun," in which the best Navy and Marine flyers from around the world participated in aerial marksmanship competitions.

Another function of the air base was to support operations of deployed air reserve units from all branches in the military, a practice that has continued to the present. During the early 1960s, MCAAS Yuma hosted an average of more than 1,000 Marine air reservists in the summer months, the pilots coming to receive training in aerial techniques and tactics such as bombing, rocketry, gunnery, and night flying. Ground crews trained in aviation electronics, mechanics and maintenance, flight operations, and other specialized areas. The number of summer visitors was augmented by Naval, Air Force, and Air National Guard reservists coming for similar training, as well as representatives from foreign air forces such as the Royal Canadian Air Force.

Supporting the myriad flight operations at MCAAS Yuma was an assemblage of ground-based operational units and facilities, each of which served a specific purpose. Marine Air Control Squadron One, or MACS-1, arrived at MCAAS Yuma in April 1960, and at the time was the only permanently tenanted at the base. The unit had the mission "to install, maintain and operate ground facilities for the detection and interception of hostile aircraft and missiles and for the navigational direction of friendly aircraft in the accomplishment of support missions." MACS-1 personnel were responsible for manning and monitoring the radar facilities, which included a control room and radar array atop "Hill 290" near the center of the base, and tracking all aircraft within the base's airspace. The squadron also trained Marine Corps aviation units in radar control and intercept techniques, and conducted practice intercepts of simulated enemy aircraft.

Another important unit was Base Operations (S-3 Office), which shouldered the formidable task of coordinating and supervising flight and flight training operations, including scheduling range use and arranging billeting for the revolving door of visiting squadrons. The Aircraft Maintenance Division provided round-the-clock maintenance services to deployed, transient, and station aircraft, and other divisions supplied ordnance and ammunition, fuel services, search and rescue operations, and

innumerable other functions. The nerve center of the flightline was the control tower, which, in addition to controlling all military aircraft, was also responsible for directing civilian air traffic at Yuma County Airport, a role it retains to the present.

Also tenanted at MCAAS Yuma was the Air Force 864th AC&W squadron, the sole holdover from the Yuma (Vincent) AFB era. Now operating under the 28th Air Division based at Hamilton AFB in California, the 864th was one picket in the North American Aerospace Defense Command (NORAD) radar defense fence covering the western sector of the United States. The 864th ceased operations at Yuma in April 1963, and the radar site was shut down.

Almost immediately after establishing MCAAS Yuma in early 1959, the Department of the Navy began to pour millions of dollars into base improvements. One of the first projects, initiated in the summer of 1959, was an extension of the existing 9,600-foot northeast/southwest runway. M.M. Sundt Company (Tucson) and M.J. Bevanda Company (North Hollywood) completed the project in the spring of 1960 for a cost of $5.8 million. Work resulted in a fully lighted, 13,300- foot-long reinforced concrete runway – the second longest in the Navy at the time – as well a parallel taxiway and a 6,100-foot-long access apron. Construction required removal of citrus orchards and placement of 200,000 cubic yards of soil, 100,000 cubic yards of soil cement, 220,000 cubic yards of concrete, and 200 miles of electrical wire.

The runway job was the cornerstone of a massive construction campaign at MCAAS Yuma, which by early 1960 had become the second largest building program in the Eleventh Naval District. Facilities built in support of flight operations included two new maintenance hangars, a new liquid oxygen facility, and a tracking building on the new Instrumented Special Weapons Delivery Range east of the base.

Marine Corps Air Station, Yuma (1962-1989). On July 21, 1962, MCAAS Yuma was elevated to a Marine Corps Air Station (MCAS), making it the newest autonomous Fleet Aerial Training Base. While the fundamental mission of supporting weapons proficiency and combat-readiness training remained unchanged, with its "coming of age" the importance of MCAS Yuma's role in the Naval and Marine aviation establishment was solidified; flight operations and base development projects increased commensurately in the ensuing years. This trend of growth accelerated in the mid 1960s, as the United States entered into war in Vietnam and MCAS Yuma reacted to the Navy's and Marines' increasing demand for combat-ready pilots. By the mid 1970s, as the Vietnam Era drew to a close, MCAS Yuma had become – as it remains – the Marine Corps' busiest air base.

One factor contributing to the increase in operations at MCAS Yuma was the decision to host Marine and Navy squadrons from all over the country, rather than just from the Pacific Fleet as had been the case when it was an auxiliary air station. In September 1962, Marine Attack Squadron (VMA) 242 became the first East Coast Marine unit to deploy to the air station. Based at MCAS Cherry Point, North Carolina, the squadron arrived with twenty A4D *Skyhawks* and embarked on a three-week attack training course including rocketry, strafing, conventional bombing, and napalm and loft-bombing exercises.

The maneuvers conducted by VMA-242 are representative of a typical training rotation at MCAS Yuma during this period, and are also indicative of the versatility of the surrounding ranges. In addition to the air-to-air range and numerous ground-based bombing, rocket, and strafing target complexes, Yuma also boasted the Navy establishment's only instrumented special weapons delivery range, known at the time as "Candid Camera." Completed in November 1960, the range offered visiting Fleet squadrons the opportunity to perfect a nuclear bomb delivery technique known as "loft-bombing" or "over-the-

shoulder bombing." This technique involves the pilot releasing the bomb during a steep climb, thus lobbing the bomb "over the shoulder" of the aircraft to the target below. The range included ground-based observation bunkers outfitted with electronic tracking and measuring devices that recorded the aircraft's speed and trajectory, gathering data which were used to calculate the accuracy of the delivery of the weapon.

During the early 1960s, a period characterized by downsizing and base closures throughout all branches of the military, MCAS Yuma thrived, owing in large part to its unique combination of facilities and environmental and geographical conditions. In December 1962, MCAS Yuma celebrated a milestone when an F8U Crusader touched down, marking the 500,000th flight operation since the base's establishment in 1959. Another milestone, reached in August 1964, was the arrival of the 500th squadron deployed at the Marine Corps air station, VMA-142 from Naval Air Station Jacksonville, Florida. This operational activity was matched with a continuing building program that added vital new facilities and infrastructure to the base. In 1964, the Department of Defense awarded MCAS Yuma an appropriation in excess of $1 million to build two new maintenance hangars for visiting aircraft, identical to the two existing modern hangars already on the flightline. Construction also commenced on several ammunition storage magazines and a new test and assembly building. Major projects initiated in 1965 included a motor transport building, a supply warehouse for MACS-1, and an operations building at the base of the control tower. Substantial improvements were also made to the aircraft parking aprons during this timeframe.

Activities and operations at MCAS Yuma spiked again during the Vietnam War era. The conflict in Southeast Asia required the participation of all Marine Corps facilities on the West Coast and elsewhere. Marine Corps aviation became involved as early as 1962, when helicopters from the 1st MAW were deployed to support American advisors, but Marine aviators were assigned to Vietnam in substantial numbers beginning in 1965. Throughout the Vietnam War era, MCAS Yuma continued its primary mission of supporting Fleet aerial weaponry training, but refined its scope to emphasize perfecting air-to-ground tactics and techniques in support of deployed Marine forces. The frequency of training exercises escalated at MCAS Yuma continued to escalate as the United States became more deeply embroiled in the conflict.

In March 1966, Commanding Officer Colonel McGlothlin announced a planned six-year buildup of personnel levels at MCAS Yuma, citing the need to keep pace with a projected increase in general Marine Corps personnel levels from 190,000 to 278,000 over the same period. Contributing to the increase in base population was the arrival of two new permanently tenanted units in quick succession in 1966. On June 1, Marine Air Training Squadron 2 (VMT-2) moved from El Toro to MCAS Yuma. Redesignated VMT-103 on July 1, the squadron included a staff of 34 officers and 240 enlisted men, and a contingent of 24 TF9-J Grumman two-seat jet trainer aircraft. The Grummans were eventually replaced, and by the late 1960s the squadron's sole responsibility was training pilots to fly the A-4D *Skyhawk* light attack jet.

On July 1, the 5th Light Antiaircraft Missile Battalion (5th LAAM Bn) was activated, relocating from the Marine Corps base at 29 Palms, California. Initially the battalion consisted of two officers and nine enlisted personnel, but by the following February, the unit had established headquarters in Building 227 and grown to a force of 500 men in two batteries, "A" and "B". The battalion's mission at MCAS Yuma was to undergo proficiency training for the "Hawk" missile, a radar-guided, anti-aircraft surface-to-air missile. The Hawk missile batteries were designed for portability and intended shoot down low-flying aircraft that could outmaneuver larger surface-to-air missiles such as the "Nike" and "Zeus". The 5th

LAAM Bn also participated in joint exercises in which pilots training at MCAS Yuma would first engage with "enemy" aircraft controlled by MACS-1, and then would try to evade the 5th LAAM missile intercepts. These exercises provided excellent training opportunities for the missile battalion, but also simulated surface-to-air missile defense tactics that pilots could expect to encounter when deployed in Vietnam. The 5th LAAM Bn was deactivated in 1969, but was quickly replaced by the 2nd LAAM Bn which also operated Hawk missile batteries.

Another major addition to MCAS Yuma came in 1969 when, on January 1, Marine Combat Crew Readiness Training Groups 10 (MCCRTG-10) was commissioned "to provide specialized tactical and technical training for aircrews and enlisted aviation personnel in airborne weapons and weapons systems for the conduct of offensive close-air support and air-to-air warfare operations." Creation of MCCRTG-10, five years in the planning, represented a major organizational shift, but did not fundamentally alter the ongoing training mission at MCAS Yuma. The Group was headquartered in Building 505 and comprised several squadrons: VMFAT-101, initially based at NAS El Toro, a fighter attack training unit flying F4 *Phantoms* with an emphasis in intercept and destruction of enemy aircraft in all weather conditions; VMAT -102, an attack training squadron flying A4 *Skyhawks* with an emphasis on aerial weapons delivery in destruction of ground targets; VMT-103, operational at MCAS Yuma since 1966 and equipped with trainer versions of the A4 *Skyhawk*, tasked with providing training for newly designated aviators and attack refresher training for qualified Naval Aviators; and Headquarters & Maintenance Squadron, H&MS-10, whose mission was to provide logistical and administrative support for the Group.

Air operations continued during this period over MCAS Yuma's two principal ranges, "Panel Stager," the instrumented special weapons range previously known as "Candid Camera," and "Panel Rakish Litter," the conventional armaments range. Rakish Litter consisted of one area for strafing practice, another for bombing runs, and a third for rocket firing by helicopters, which by this time were seeing heavy combat in the Vietnam theater of operations. Each range included three observation towers and ground-based targets – some equipped with electronic sensors – as well as their own billeting and mess facilities. In addition to the two million acres under MCAS Yuma's direct control, the Marine Corps air base could also arrange access to another three million acres of nearby ranges controlled by NAS El Centro, Luke AFB, and the U.S. Army Yuma Proving Ground.

MCAS Yuma also put its network of facilities to use in support of hot-weather testing programs for emerging military technologies and weapons systems. In the summer of 1968, for example, the Air Force put the McDonnell Douglas F4-E *Phantom* fighter through its paces over the skies of Yuma. The F4-E was an improved version of the older F4-C *Phantom*, a workhorse of the Air Force, Navy, and Marine forces. The new aircraft featured a sleeker aerodynamic design, more powerful engine, an internal cannon, and larger bomb payload capacity. MCAS Yuma performed the hot weather testing on the aircraft; later, humidity testing and cold weather testing were respectively performed in Panama and Alaska. In 1970, the base performed similar hot weather testing on the British Hawker-Siddeley *Harrier*, a vertical/short field take-off and landing (V/STOL) jet. The light-attack jet was the world's first operational fixed-wing jet capable of vertical lift-off; by the mid 1980s it had become a mainstay of the Marine Corps fleet and had a squadron was permanently assigned to MCAS Yuma.

Construction activities at MCAS Yuma surged during the Vietnam Era, boosted by huge allotments, projected in 1968 to exceed $35 million over the next four years. One of the largest projects during this period was a training and administrative complex for recently activated MCCRTG-10. Opened in mid 1970, the building complex consisted of four buildings covering an area of more than 22,000 square feet

and including administrative offices, classroom space, and an avionics aircraft training area. Augmenting this complex was a separate Training Support Center, Building 508, which maintained a library of training films and a series of flight simulator training devices: an F-4J cockpit trainer, an F-4J weapons system trainer, an A-4M operational flight trainer, and a radar trainer. The Training Support Center continued to maintain the latest simulators in the Marine Corps, updating the trainers as they become available. Currently the facility houses simulators for the AV-8 *Harrier*, which first arrived at MCAS Yuma in the late
1970s.

Other major additions included a new base operations building located adjacent to the control tower, which housed every section of the Operations Department; an aircraft engine maintenance and repair building for VMT-103; an avionics-electronics communications building; a jet engine test cell and turbo jet engine facility; structural fire and crash station; an air defense training complex, provides new spaces for MACS-1 and 2nd LAAM Bn; and an aircraft maintenance hangar. The runway was augmented with modern hydraulic arresting gear, replacing the old chain-type gear, and aircraft parking aprons were updated to handle large aircraft. Personnel support facilities included two 210-man barracks, quarters for 40 officers, additional family housing, and a chapel, gymnasium, exchange annex, and dispensary and dental clinic.

Even after hostilities in Vietnam came to a close, MCAS Yuma retained its title as "Busiest Air Station in the Marine Corps," year after year supporting up to a quarter of a million flight operations – many of which were civilian flights at the Yuma County Airport. The air base also continued to host as many as 80 deployed squadrons annually, hailing from Marine Corps, Navy, Air Force, Army, and various reserve units from across the country. By the mid 1980s the main base covered an area of 3,050 acres, much larger than the original 640-acre airfield, and represented an investment of more than $325 million. The permanent MCAS Yuma population had grown to more than 9,000 people, including dependents.

The training mission remained essentially unchanged from the end of the war until 1987, when MCAS Yuma become home of several combat-ready units. MCCRTG-10 remained the heart of operations at MCAS Yuma throughout this timeframe. In November 1976, Marine Attack Squadron 513 (VMA-513) joined the Group, bringing with it a contingent of AV-8A *Harriers*. The mission of the squadron was to provide close air support in combat operations, conduct reconnaissance, and to a lesser extent, provide air defense. It was the only tactically deployable squadron attached to MCCRTG-10 at the time, the rest being training units.

Other permanently tenanted units at MCAS Yuma during this period were Marine Aviation Weapons and Tactics Squadron 1 (MAWTS-1), Marine Air Control Squadron 7 (MACS-7), and Marine Fighter Training Squadron 401 (VMFT-401). MAWTS-1 was commissioned in June 1978 to assist in increasing combat readiness of Fleet aviation units. One of the squadron's key responsibilities was developing and supervising formal academic courses in aviation weapons and tactics. To this end, MAWTS-1 created and conducted the Weapons and Tactics Instructors (WTI) program, a postgraduate-level course of instruction aimed at advanced training for highly experienced pilots and aviators from all branches of the military. The seven-week course, conducted twice a year, consisted of three phases: academic, covering threat analysis, weapons systems, and general instruction in fixed-wing and rotary-wing aircraft practices; flight, consisting of specific weapons and tactics employment for specific types of Marine Aviation aircraft; and final exercises, "in which WTI students plan, execute and debrief integrated missions in a sophisticated threat environment." MAWTS-1 classroom and administrative offices were located in Building 505.

In 1980, MACS-7 transferred from Camp Pendleton to MCAS Yuma to assume responsibilities formerly held by MACS-1 (disestablished) in operating radar and air control equipment for air defense. Under command of the 3rd Marine Aircraft Wing and headquartered in Building 144 along the flightline, the unit was outfitted with long-range surveillance radars and sophisticated electronic systems and provided air defense control services for the Marine Corps, Navy, and Air Force.

Also joining the ensemble of permanently tenanted units was VMFT-401, an aggressor squadron assigned to the 4th Marine Air Wing and activated at MCAS Yuma in March 1986. The squadron flew 13 Israeli-built Kfir F21A fighter jets, which were selected because their flight characteristics were similar to the Soviet MiG-21. Squadron pilots were trained in Soviet flight tactics and provided "dissimilar aircraft aggressor" techniques to improve air-to-air combat capabilities of Marine fighter pilots.

Flight training operations continued over the Combined Bombing Range (Rakish Litter and Panel Stager) during the 1980s. In 1985, range management installed more than 300 wooden targets throughout the range complex to simulate Soviet tactical scenarios. During the same year, 83 Army, Navy, Air Force and Marine Corps unit deployments involving 7,000 personnel and 600 aircraft conducted operations on the ranges. To further augment base operations, MCAS Yuma constructed a new radar air traffic control facility, an applied instruction building, flightline support buildings for VMFAT-101 and VMA-513, and various maintenance and repair shops. Notable among the maintenance and repair facilities was the Aircraft Intermediate Maintenance Department's (AIMD) new Airframes, Administration, Quality Assurance and Material Sections building (Building 230), used to provide intermediate level aircraft maintenance support for MCCRTG-10 and transient units deployed to MCAS Yuma. The facility gave AIMD the capability to perform repair work in-house, reducing the need to send components off base.

In 1987, there was a fundamental change in MCAS Yuma's mission, as the focus shifted from training to permanently hosting combat-ready squadrons. On October 1, Marine Aircraft Group 13 (MAG-13), transferred from MCAS El Toro and replaced MCCRTG-10 as Yuma's principal operational organization. MAG-13 was a deployable tactical air combat unit, comprising VMA-513, already based at Yuma, and three other Marine Attack Squadrons (VMA-211, -214, and - 311) from El Toro, the last of which completed the move to MCAS Yuma in 1988. The two Marine Attack Training Squadrons then stationed at Yuma, VMAT-101 and VMAT-102, were transferred to MCAS El Toro and deactivated, respectively. Headquarters & Maintenance Squadron (H&MS) 10 was also deactivated, replaced by H&MS-13 from El Toro. Tenant units that remained at MCAS Yuma through the changeover included MAWTS-1, MACS-7, and 2nd LAAM Battalion. By the end of 1989, when MCAS completed its two-year tactical air ("TacAir") transition, MAG-13 had grown to a combined force of 80 next-generation AV-8B *Harriers*, replacing the venerable A4-M *Skyhawks*, the Marine Corps' principal attack fighter jet since the late 1970s.

Despite MCAS Yuma's transition to front line tactical air base, training activities for deployed squadrons continued, as they have to the present. In late 1990, virtually every Marine Corps fixed wing squadron that ultimately deployed for Operations Desert Shield and Desert Storm trained at the base. All four of the MAG-13 *Harrier* squadrons participated in Operation Iraqi Freedom in 2003, and played a continual support role in Iraq until returning to MCAS Yuma for further deployment training in 2008. Throughout the post-Cold War era, the air station has remained the Marine Corps' busiest aviation base, currently hosting 100 units from U.S. and NATO forces each year, totaling 600 aircraft and 14,000 personnel. MCAS Yuma also retains bragging rights as "one of the Marine Corps' premiere aviation training bases," with access to 2.8 million acres of bombing and aviation training ranges in southwestern Arizona and southeastern California, and perfect flying conditions on more than 360 days of the year.

IX. BARRY GOLDWATER RANGE WEST

World War II stimulated the development of what today is the BMGR, and altered the historic patterns of land use in the region. The range was initially established in the fall of 1941 to support the Army Air Forces flying training programs at Luke Field (Luke AFB after 1950) and Williams Field (Williams AFB after 1947). The first parcel of land selected for the range had three key characteristics critical to its intended mission. First, the new range was in close flying proximity to Luke and Williams fields (straight line flying distances of about 52 and 69 miles, respectively). Second, except for some scattered ranches and mines, the land was uninhabited and undeveloped. Third, at 1,684 square miles (1,077,500 acres), the initial range tract was large enough to be subdivided into several separate training areas that could safely support several simultaneous but independent training missions, which added significantly to the productivity of the overall training program.

Although the initial range was expansive, land continued to be added to provide training capacity to produce qualified aircrews for the Nation's war effort. The complex expanded to a total of 4,339 square miles (2,776,968 acres) during the World War II era. In November 1942 and March 1943 lands were added to the western part of the range to support flight training programs at Yuma Army Air Base, which opened for operations on 29 June 1942 as a training command separate from those at Luke and Williams fields. By the end of 1942, the eastern and western range components were known as the "Gila Bend Gunnery Range" and "Yuma Aerial Gunnery and Bombing Range," respectively, and this east-west split of range resources continues today. The BMGR has had a number of official and unofficial names, including: *Ajo-Gila Bend Aerial Gunnery Range*; *Williams Bombing and Gunnery Range*; *Luke-Williams Bombing and Gunnery Range*; and, from 1963 to 1986, *Luke Air Force Range*. It was officially renamed the Barry M. Goldwater Air Force Range with the passage of the MLWA of 1986. Barry M. Goldwater Range East and Barry M. Goldwater Range West became the designated names of the segments managed by the Air Force and Marine Corps, respectively, in 1999.