

## **Historic California Posts, Camps, Stations and Airfields**

# **Air Force Plant 16**

In 1929, a wealthy industrialist named E.M. Smith purchased a 73 acre parcel from James Hughan, who farmed oranges and castor beans on the site. Smith's EMSCO Company had a division called Albatross, which manufactured small aircraft. In addition to manufacturing aircraft, Smith saw the former farm land in Downey as a perfect landing field. The oldest buildings on the Downey Site were built in 1929 to support the aircraft manufacturing effort. In 1932, with the Great Depression lagging and poor sales, EMSCO leased the site to Champion Aircraft Corporation who manufactured small, inexpensive 2 seaters meant to fly at low altitudes and low (as little as 10 mph) speeds. Seven months later, Champion also left the site due to poor sales, and the site was leased to Security National Aircraft Corporation. Security was owned by Walter "Bert" Kinner, who designed and built 2 planes for Amelia Earhart.

Ownership continued to change hands and in 1936, Aviation Manufacturing Corporation moved their Vultee Aircraft Division into the Downey Site at the suggestion of Gerard "Jerry" Vultee, who once worked for EMSCO as their chief design engineer. Vultee primarily manufactured large military aircraft and sold planes to the governments of China, the Soviet Union, Turkey and Brazil. Vultee was working on a contract with the United States government and was flying back from Washington DC when he and his wife were killed in a plane crash in 1938. The company forged on without him, and in the 1940's, the Army Air Corp awarded Vultee Aircraft a contract to make their training planes, the Vultee Valiant Basic Trainer. The contract was the largest order ever placed by the Army Air Corp. In need of additional space, LA Architect Gordon B. Kaufman designed space which would double Downey's size.

Then came World War II and security at the plant was increased. In addition to the anti-aircraft gun which was mounted on the roof, the entire plant was camouflaged to blend in with the surrounding farmland. By 1941, the plant's output represented 15% of all the military aircraft produced in the U.S. and boasted the first powered assembly line in the aircraft industry. Among many different types of aircraft, Vultee produced the largest number of heavy bombers (B-24 Liberators) in the country.

After the conclusion of the War, Vultee was awarded a contract to study long-range missile weapons systems. In the 1950's and 60's the site was officially known as AFP16 (Air Force Plant 16) and was working on developing the Navaho Missile, whose technology would give birth to our first space vehicles. In addition to all the innovation in technology, there were also many mergers and consolidations in the industry. Vultee gave way to Convair which became North American Aviation, which merged with Rockwell Standard and finally North American Rockwell Corporation.

In the late 1950's the plant became the location for developing the Hound Dog AGM Missile, which was the prototype for cruise missile technology. The company also won the contract to make the "Little Joe Launch Vehicle" to test the Mercury capsules. In 1960, the company was working on the development of the X-15 aircraft, truly a pioneer in aviation history. The X-15 aircraft was the first winged craft to reach 4, 5 and 6 times the speed of sound, and fly at altitudes greater than 100,000 feet. In 1961 the company was awarded 2 contracts from NASA: the Saturn SII launch vehicle and the Project Apollo Spacecraft Development program. With that, Downey became the hub of America's lunar mission. In 1964, the AFP16 facility was transferred to NASA, thence being known as NASA Industrial Plant, Downey.

In July 1972, at the end of the Apollo program, Downey was given the job of assembly and component manufacture of the Space Shuttle Orbiters. Over the course of the next 13 years, 4 Space Shuttle Orbiters - Columbia, Challenger, Discovery and Atlantis - were constructed at Downey. The Endeavor, which replaced the Challenger, was also manufactured at Downey. Downey would also be involved in the Skylab project.

During the 1990's, the workforce at Downey was decreased and Rockwell was bought out by Boeing North America. Boeing began consolidating its operations and announced that it would close the Downey plant permanently by the end of 1999.

## **NASA Industrial Plant, Downey: Chronology of Historical Usage**

Appendix A provides a chronological overview of activities that have been performed at the NASA Industrial Plant, Downey, California. Information incorporated was obtained from historical summaries provided by Rockwell and NASA. Information contained in these historical summaries has not been verified and cannot be validated for accuracy.

Pre-1929: Facility is a ranch operated by James Hughan. Land area was a combination of orange orchards (Communique`, 1983) and plowed fields. Windmill operated water well is associated with the ranch house and barn (pre-1929 photograph).

1929, May 72.45 acres of land transferred to E. M. Smith who formed Emsco Aircraft Corporation. Emsco blossoms to a two-runway airport with a manufacturing facility and a flying school (Unauthored, 1988).

1932 Emsco Plant is idle and is leased to Champion Aircraft Corporation for eight months. The facility is then leased to Curtiss Manufacturing of Los Angeles for the assembly of trucks, busses, and airplanes (Unauthored, 1988).

1933, February W.B. Kinner forms Security National Aircraft Corporation and takes over the Downey facility to manufacture special folded-wing, single-engine aircraft. Three planes were sold and Kinner abandoned the plant (Unauthored, 1988).

Post 1933 - 1936? Baker Oil Tool Company operates the facility (Unauthored, 1988). Information on their operations was not available; possibly manufactured tools for the oil industry.

1936 Jerry Vultee creates Vultee Aircraft Corporation, a division of Aviation Manufacturing Company, manufactured the V-II a single-engine attack bomber that was sold to Spain, China, Latin America, and the Middle-East (Unauthored, 1988).

1941 Vultee Aircraft acquires a large minority interest of Consolidated Aircraft of San Diego and forms Consolidated-Vultee, and later Convair (Barton,1988). These two plants produced more than 13,000 aircraft during the war (Unauthored, 1988).

1940 - 1941 The United States Army Air Corps acquired 93.7 acres of land adjacent to the Convair facility and constructed 644,700 square feet of factory space. Convair added about 178,000 square feet to its working area. Overall, the facility was expanded from 84,000 square feet to 906,700 square feet (Unauthored, 1988).

1946 Consolidated-Vultee received a contract in 1946 to study a long-range missile program called the MX-774 Program. The program was canceled in

July, 1946 (Murray, 1981). Doors of the Convair Downey facility closed shortly thereafter (Unauthored, 1988).

1948 North American Aviation (NAA) leased the Convair-owned and government-owned properties. The Convair property is used for storage and the government property is used for manufacturing aircraft. The Aerophysics Laboratory, which consisted of a rocket propulsion, electronics, nuclear power, and aerodynamic space-type hardware research is housed at Downey (Unauthored, 1988). · NAA works on the MX-770 missile system.

Downey operations are renamed Missile and Control Equipment Division (MACE) and are dedicated to missile technology (Barton, 1988).

1949 First high-thrust liquid rocket engine is constructed. Early investigations at Downey show that nuclear-powered missiles would be premature; therefore, NAA diverts their Aerophysics Laboratory work to commercial applications. The first water boiler-type nuclear reactor is put together at the Downey laboratory. The reactor had the ability to power a flashlight (Murray, 1981).

1950 NAA purchased the Convair property (Unauthored, 1988).

1953, September NAA exchanged the property north of Imperial Highway in Downey to the government and the property south of Imperial Highway and Aviation Boulevard by Los Angeles International Airport is deeded to NAA. The Downey facility became known as United States Air Force (USAF) Plant #16. NAA is awarded a facility contract to maintain, refurbish and expand the site (Unauthored, 1988). The Navaho supersonic cruise missile program, USAF Weapons System-104A (WS-104A), begins from 1953 to 1957

(Unauthored, 1988; Barton. 1988). The Downey facility develops the prototype (X-10), the rocket booster and ramjet (XSM-64), and a full-scale Navaho (SM-64).

The Navaho results in the development of the chem-milling process and brazing of stainless steel sandwiches (honey combed metal) to develop a light-weight metal frame. In addition, the technology for welding pressurized aluminum alloy tanks is developed. Technology from the Navaho is also used to develop the Redstone engine (Barton, 1988).

1955 NAA divides into its various divisions and moves them off-site. The Missile Division (space elements) and Autonetics Division (electronics and

avionics) remain at Downey. Rocketdyne (rocket-fueled propulsion engines) and Atomics International (commercial nuclear power generation) divisions move to Canoga Park in San Fernando Valley (Unauthored, 1988).

1957 USAF Plant #16 is about 1,453,137 square feet (Unauthored, 1988): The Hound Dog, Weapon Systems-131(WS-131) air-to-surface missile program is launched (Unauthored, 1988).

1958 Space Act of 1958 is passed, which created the National Space Council and the National Aeronautics and Space Administration (NASA) (Barton, 1999).

1959 NAA received the contracts for the Little Joe launch vehicle, which consisted of a launcher, booster, and full-scale capsules to be used in the development of the Mercury program (Barton, 1988)

1960 NAA reorganizes the Downey facility into the Space and Information Systems Division (S&ID). The Downey facility offices are remodeled (Unauthored, 1988; Barton, 1988). 1961 NAA received contracts to build the Saturn S-II launch vehicle and the Apollo Command and Service Module. NAA receives another facility contract from USAF (Unauthored, 1988).

1962 Downey plant has 250,000 square feet of manufacturing and test facilities added for the Saturn and Apollo programs. The Autonetics Division departs to Anaheim and its vacated offices are transferred to these programs (Unauthored, 1988).

1964 The USAF Plant #16 is transferred to NASA, as NASA Plant #1. NAA receives a facility contract from NASA (Unauthored, 1988).

1965 - 1966 NASA plant #1 facilities are expanded for the Apollo program (Unauthored 1988). Construction included Buildings 288 and 290. A S-II Pressurization System Facility is constructed in the area just north of Building 288 (Barton, 1988).

1967 NAA merges with Rockwell Standard forming North American Rockwell (NAR). The S&ID name is changed to Space Division (Murray, 1981; Unauthored 1985).

1969 NAR is awarded the Space Station contract.

Early 1970s NASA's facilities cover about 1.7 million square feet and the

Rockwell facility covers about 450,000 square feet. The Downey facility is about 200 acres. In 1970, Rockwell sells two buildings located south of Imperial Highway to Los Angeles County (Unauthored, 1988; Unauthored, 1995). Also in 1970, a Rotational Research Facility is constructed to evaluate the effects of rotation on a human's ability to perform operational risks. The Skylab program originally called Apollo Applications Programs is embarked.

1972 Rockwell is contracted to design, develop, test and evaluate the Space Transportation Systems (STS), also known as the Space Shuttle program (Unauthored, 1988). The Apollo-Soyuz Test Project (ASTP) design development and testing are undertaken (Rockwell News, 1983).

1973 NAR and Rockwell Manufacturing merge to form Rockwell International (Rockwell). Rockwell is awarded the Navstar global positioning system satellite program (Rockwell News, 1983; Unauthored, 1985).

1974 Full-scale mock up is made of Shuttle located at the NASA Downey facility, in Building 001, just west of the DEI room (Rockwell News, 1983).

1978 Rockwell is working on the Space Shuttle Orbiter's development (Barton, 1988).

1979 Space Division receives contract to modify the Space Shuttle Orbiters (Rockwell News, 1983).

1980s Downey Space Division is renamed Space Transportation Systems Division (STSD) (Rockwell News, 1983).

1981 - 1986 Rockwell constructs four Shuttle spacecraft. A fifth shuttle constructed was used for approach and landing test (Unauthored, 1988). Completion dates for the Shuttles are: Columbia, March 1979; Challenger, June 1982; Discovery, October 1983; Atlantis, April 1985; and Enterprise, September 1976. The majority of the engineering and manufacturing are accomplished at Downey and final assembly is at Palmdale (Rockwell News, 1983).

1987 - 1991 Endeavor is constructed to replace the Challenger. The Space Station Freedom program is being worked on (Rockwell News, 1983).

1992 Activities at Downey are consolidated (Unauthored, 1995). 1995 Rockwell is developing several new space surveillance and anti-missile

defense systems for the Department of Defense (DoD) and, is the prime contractor for the Airforce Navistar GPS Block II/IIA Satellites and launch vehicles X-33 and X-34 (Unauthored, 1995). Mid-1995, the manufacturing facilities are relocated and consolidated at the Palmdale facility. Shuttle tooling from off-site subcontractors and a Bell, California warehouse are placed in storage at various locations at the Downey facility (Unauthored, 1995).

<http://www.militarymuseum.org/AFPlant16.html>