

KELLY AIR FORCE BASE, AIR CORPS OPERATIONS HANGAR
(Building No. 301)
(Building No. 1610)
303 South Frank Luke Drive
San Antonio
Bexar County
Texas

HABS TX-3396-AF
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PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA
FIELD RECORDS

HISTORIC AMERICAN BUILDINGS SURVEY
INTERMOUNTAIN REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
12795 West Alameda Parkway
Denver, CO 80228

HISTORIC AMERICAN BUILDINGS SURVEY

KELLY AIR FORCE BASE, AIR CORPS OPERATIONS HANGAR
(Kelly Air Force Force Base, Building 1610)

HABS No. TX-3396-AF

Location: Approximately 8 miles southwest of downtown San Antonio, in the vicinity of San Antonio, Bexar County, Texas

~~303 S. Luke Drive~~ 303 South Frank Luke Drive
Kelly Air Force Base
San Antonio
Bexar County
Texas

UTM Coordinates: Zone 14
Northing: ~~563000~~, Easting: ~~2135000~~ 29.382728, -98.574113
(San Antonio, Texas, 7.5-minute USGS Quadrangle)
obtain 4 March 2013 using Google Earth

Date of

Construction: Construction period: 1939-1940; Completed 06/26/40

Present Owner: United States Air Force
Kelly Air Force Base
San Antonio, Texas 78241

Current Occupants: 76 Support Group/Communication Squadron (76 SPTG/SC)
(651 CLSS)
Air Force Office of Special Investigations/Detachment 107
(AFOSI/DET 107)

Original Owner: United States Army Air Force (Kelly Field)

Original Use: Air Corps Operations Hangar and Annexes

Current Use: Hangar, Offices, Storage

Significance:

Building Number 1610, originally numbered 301, was part of the extensive reconstruction undertaken at Kelly Field between 1938 and 1942, before the United States entered World War II. In 1940, when construction of the operations hangar was completed, Kelly Field was the home of the Advanced Training Facility for the Gulf Coast Training Command, one of three such commands in the United States. During World War II, Kelly Field hosted ambitious programs to train thousands of new pilots, and the operations hangar was a key facility utilized in the development and implementation of those programs. As a result, Building 1610 is eligible for inclusion in the National Register of Historic Places under Criterion A, because it was associated with Kelly Field's World War II pilot training mission. In addition, the building is eligible for nomination under Criterion C because it is an excellent example of the Utilitarian-style industrial architecture that typified Air Service/Air Corps hangar design between 1917 and 1946. The well-detailed first and second floor exterior walls of the annexes also display elements associated with the Art Moderne style that was utilized in many federal projects during the 1930s and early 1940s.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of Construction:

Construction period: 1939-1940; Completed 06/26/40

2. Architect:

Office of the Quartermaster General

3. Original and Subsequent Owners:

U.S. Army Air Force; U.S. Air Force

4. Builder(s), Contractor(s), Supplier(s):

Builder(s): Office of the Quartermaster General

Contractor(s): Robert McKee, El Paso, Texas

Supplier(s): Unknown

5. Original Plans and Construction:

Plans for the building were drawn by the Construction Division of the Office of the Quartermaster General, San Antonio, Texas. Plans and construction drawings are in good condition and are located at the Base Civil Engineering Office, Kelly Air Force Base (AFB), San Antonio, Texas.

6. Alterations and Additions:

The building retains its basic original exterior configuration. The following modifications have not altered the overall integrity of the structure. Alterations to the hangar include removal of original skylights and replacement of the asphalt-protected roof with corrugated metal. Modifications to the annexes include the reconfiguration of the original exterior window openings and replacement of approximately one-half of the original exterior windows and doors. Extensive modifications to the interior spaces of the annexes have also been made.

A short chronology of major modifications, taken directly from the real property records for Building 1610, is as follows:

| <u>Date of Modification:</u> | <u>Description</u> |
|------------------------------|---|
| 1945 | Erect fire escape |
| 1951 | Install celotex ceiling, cover floor w/asphalt tile |
| 1952 | Construct room in building |
| 1952 | Construct awning |
| 1952 | Construct office in building |

| | |
|------|--|
| 1953 | Install beacon light |
| 1953 | Remodel Control Tower |
| 1957 | Install metal catwalk and antenna tower base |
| 1960 | Extend awning over entrance to dispatch lobby |
| 1961 | Lobby counter constructed |
| 1963 | Alter and modify flight hangar |
| 1964 | Replace entrance doors to base operations |
| 1965 | Install acoustical suspended ceiling |
| 1966 | Refurbish flight operations area |
| 1967 | Install corrugated metal cover over offices in hangar |
| 1967 | Install access ladder and platforms above offices in hangar |
| 1968 | Second floor office area modified |
| 1969 | Install new metal canopy and modify entrance area |
| 1970 | Replace 6-inch concrete floor with 12- to 18-inch concrete floor |
| 1972 | Construct new office space on second floor |
| 1984 | Install new windows along south elevation |
| 1995 | Hangar doors repaired |

B. Historical Context:

Less than 4 years after Orville and Wilbur Wright's December 17, 1903, first flight at Kitty Hawk, North Carolina, the creation of the Aeronautical Division of the Army Signal Corps on August 1, 1907, marked the beginning of military aviation in the United States. Following tests at Fort Meyer, Virginia, the Army accepted its first airplane, the Wright Type A (renamed Army Aeroplane Number 1), on July 30, 1909. A contract was signed with the Wright brothers to train two pilots, First Lieutenants Benjamin D. Foulois and Frank P. Lahm, at a new location near the Maryland Agricultural College at College Park, Maryland. In late November, 1909, the Chief of the Signal Corps, Major General James Allen, transferred the College Park operations to San Antonio, Texas, where the year-round dry and temperate climate offered more training time. He instructed Lieutenant Foulois to take Aeroplane Number 1 to San Antonio "with plenty of spare parts and to teach himself to fly." In February 1910, with only 54 minutes of training under Wilbur Wright and having never flown solo, Lieutenant Foulois arrived at Fort Sam Houston. He was the Army's only pilot flying their only aircraft. From June 1 to June 7, 1910, he made five flights from a small hangar in the post's northwest section. In April 1911, three officers from the new Glenn H. Curtiss flying school on North Island, San Diego, California, including Lieutenant George E.M. Kelly, joined Foulois at Fort Sam Houston. On May 10, 1911, Lieutenant Kelly was killed when he crashed while trying to land a Curtiss Type IV pusher. Following that first air fatality for the Signal Corps, Fort Sam Houston's commanding general forbade any further flying at the post, and the squadron (except Lieutenant Foulois) returned to College Park. Until the establishment of Camp Kelly 6 years later, the only military aviation

activity in the region was forays into Mexico against Pancho Villa in support of the Pershing Punitive Expedition (1913-15) (Office of History 1980:1-3).

Kelly Field. In August 1913, U.S. Army Chief Signal Officer Brigadier General George P. Scriven testified before the U.S. House of Representatives concerning the establishment of a military aeronautical center in San Antonio, Texas. The center was to be built for the Aeronautical Division of the U.S. Army Signal Corps. General Scriven, expressing an opinion endorsed by his subordinate officer, Captain William "Billy" Mitchell, described San Antonio as "the most important strategic position of the South." In July 1914, the Aeronautical Division was renamed the Aeronautical Section, Army Signal Corps. Two years later, when Fort Sam Houston was the primary site of the Corps' aerial equipment and personnel, the *San Antonio Light* predicted that the city would be "the most important military aviation center in the United States" (*San Antonio Light*, November 5, 1916).

In December 1916, a 677-acre site located 5 miles southwest of San Antonio was leased for a new aviation camp. On April 5, 1917, the first four aircraft landed at the new camp, officially known as The Army Aviation Post, South San Antonio, Texas. When the United States declared war against Germany on April 6, 1917, the Army had only three active flying schools: the oldest and largest at San Diego, California; a new installation at Mineola, Long Island; and a small unit at Chandler Field in Essington, Pennsylvania. One month later, on May 7, the first 53 recruits arrived at the South San Antonio Aviation Post for flight training. By June 11, 1917, when the new post was designated Camp Kelly in honor of the first American military aviator to die while piloting an aircraft, there were 4,000 recruits at the camp (Montoya 1993:1-3).

The center of military aviation that had been envisioned arrived with the establishment of Camp Kelly, designated in 1922 as the Air Service's Advanced Flying School. Camp Kelly was a proving ground for aviators during the 1920s and the location of the Air Corps Training Center; all Air Corps training in the United States between 1926 and 1931 was coordinated there. In the 1930s, Kelly Field was a center for advanced training for young American fliers and became the "Alma Mater" of nearly all the Air Corps pilots before World War II (*San Antonio Light*, November 6, 1916).

The U.S. Army Air Service was created out of the Army Signal Corps in 1918 as a separate and equal arm under the Army. In 1926, the Air Corps Act created the U.S. Army Air Corps, with representation on the General Staff of the Defense Department. The Air Service needed trained pilots and required a complex logistics network. Already a leading center for the training of aviators, Camp Kelly was also prominent in the training of non-flying support crews, and in the supply and maintenance of the equipment necessary for an effective Air Corps. The ties between logistical support and combat capability were close and resulted in the location of the Air Depot on a portion of present-day Kelly AFB in 1926. Named the San Antonio Air Depot in 1927, the installation was one of three Air Service repair and supply depots in the United States that survived the post-World War I demobilization effort. It was one of four air depots in the country

after 1926, and the facility where up to one-third of the Army's aircraft were maintained. By 1943, the Depot had become one of the world's largest such installations as flight training activities were shifted elsewhere.

Kelly Field, 1916-1918. The years leading up to American involvement in World War I had been innovative but frustrating ones for those who believed in the wartime potential of air power. In 1916, largely because of sporadic and insufficient funding, the United States lacked not only a cadre of trained fliers and ground crews on whom to build an aerial combat force, but also the necessary training and flying fields, airplanes, and technology. Toward the end of 1916, however, initial plans were developed to rectify that situation. San Antonio was identified as the future home station for new aero units, and a new field in south San Antonio (Kelly Field) became the nation's fourth Army training field by April 1917.

The return of Major Benjamin Foulois, one of the first military aviators and the "father of military aviation," to San Antonio in 1916 marked a first step in the development of what would become the country's largest airfield. Soon after his arrival, Foulois scouted the general area of San Antonio and identified what appeared to be an ideal tract along Leon Creek, approximately 8 miles southwest of downtown San Antonio. Chief Signal Officer General Scriven approved Foulois' choice on November 21, 1916, and the San Antonio Chamber of Commerce offered to help acquire a lease to the property (money for land purchase had not been included in earlier Congressional appropriations). The lease was signed in December 1916, and in January 1917 General Frederick Funston, Commander of the Southern Department (of the Signal Corps), received funding authorization for the first year's lease. When diplomatic relations broke off with Germany (Boden 1967:9), Foulois replaced Major William "Billy" Mitchell as assistant to the Chief of the Aviation Section, Office of the Chief Signal Officer; Captain Townsend F. Dodd replaced Foulois as Chief Aviation Officer of the Southern Department (Isbell 1962:68). With Dodd's arrival in San Antonio on March 19, 1917, events moved forward rapidly at Camp Kelly (as Kelly Field was originally called). On April 5, 1917, the first airplanes from the Third Aero Squadron were flown from Fort Sam Houston to Kelly Field.

In May 1917, with the aviation camp rapidly filling with new arrivals, General James Parker, Commander of the Southern Department, officially designated the site "Camp Kelly." Named in honor of Second Lieutenant George E.M. Kelly, who had died in an airplane crash at Fort Sam Houston on May 10, 1911 (Isbell 1962:75; Office of History 1980:9), the camp soon became a tent city. Thousands of recruits arrived by train and disembarked, were processed, and, at least initially, were put to work constructing wooden barracks and completing the water and sewer system (Weblin 1966: n.p.). With standardized plans not yet available, crews erected 57 barracks along Frio City Road (present day Duncan Drive) and the ground was cleared for a 403-acre flying field (Isbell 1962:73). By June 1917, Camp Kelly had become the main construction and mobilization center for non-flying personnel in the Air Service. It was quickly apparent that the land acquired for Camp Kelly was insufficient to accommodate new facilities and the growing numbers of recruits. In a repeat of their December 1916 actions, the San

Antonio Chamber of Commerce worked to obtain leases for additional land, which it then sublet to the government. These numerous property parcels, adjacent to Camp Kelly and extending west and south to Leon Creek, became known as Kelly Field No. 2. Formalities with the military government were completed by mid-July 1917, and a double-unit flying school was scheduled to be built and called Kelly Field No. 2. Simultaneously, complementary programs took shape at Camp Kelly.

On July 30, 1917, the name "Camp Kelly," which had been applied to the aviation camp southeast of Frio Road, was changed to "Kelly Field." Thereafter, the older, original portion of the base was known as "Kelly Field No. 1" and the more recent portion (north and west of Frio Road) was referred to as "Kelly Field No. 2."

Kelly Field, 1918-1926. The signing of the Armistice in 1918 was followed by demobilization efforts throughout the United States. Strong isolationist tendencies asserted themselves in America, and Congress cut military appropriations dramatically. With decreased funding, the Air Service experienced cutbacks in personnel and equipment. Rapid changes in the status of the Air Service after 1918 and the effects of years of debate concerning air policy were reflected in the development of Kelly Field. The hectic pace of World War I activities at Kelly Field halted abruptly as demobilization and cuts in funding reduced the facility's population and brought most new construction to a halt. However, several idle years at the Kelly Field No. 2 flying school were followed by the centralization of all Air Service flight training in San Antonio and the designation of Kelly Field No. 2 as the nation's Advanced Flying School in 1922. After 1922, Kelly Field No. 2 was the location of a nationally significant training program. Kelly Field No. 1 became home to a supply and maintenance depot in 1921 when the Aviation Repair Depot was moved from Love Field in Dallas to Kelly Field, where it was combined with the existing Aviation General Supply Depot to form one of the three national air intermediate depots.

Although it would be another year before the combination of the Lassiter and Morrow Boards' reports, lobbying by Air Service leaders, and a congressional investigation would result in the passage of the Air Corps Act of 1926, the Air Service was already concerned with the need to develop an organization that would separate flying and support activities. Thus, in March 1925, Kelly Field No. 1, the site of the depot, was renamed Duncan Field, formally separating the location of the supply and maintenance functions from those of the flyers on Kelly Field No. 2, which retained the designation Kelly Field. Creation of the Air Corps Materiel Division a year later (as part of the reorganization called for by the Air Corps Act) confirmed this separate command structure of the Army's air arm.

Kelly and Duncan Fields, 1926-1936. The years from 1918 to early 1926 had seen a major downturn in the fortunes of the Air Service in the United States, but the succeeding decade was one of significant retrenchment and readjustment. Change within the military arena was paralleled by almost cataclysmic change in the civilian realm as the prosperous 1920s were followed by a decade of economic depression. Thousands of citizens were left jobless by the

early 1930s, and in Texas, Bexar County experienced an unemployment rate that exceeded that of any other county in the State. The federal response to the unemployment crisis took several forms, among which were the Public Works Administration (P.W.A.), Civil Works Administration (C.W.A.), and Works Progress Administration (W.P.A.). At Kelly Field No. 2 and Duncan Field, the construction projects completed under the various federal works programs, together with the innovative military programs called for by changes in national policy, ensured that the decade 1926-1936 was an eventful one. Kelly Field No. 2 continued as one of the most advanced flying schools in the nation, while Duncan Field maintained operations as a premiere air depot.

Kelly and Duncan Fields, 1936-1946. With the implications of U.S. involvement in the war, strategists realized that it would be wise to build and train an effective air force. President Roosevelt immediately took steps to build American air power. In 1938-1939, Roosevelt proposed to spend \$300 million for an expansion of the Air Corps: \$130 million was spent on training personnel and \$170 million was spent on new airplanes, new air bases, and new construction at old air bases (Office of History 1980:64).

By 1941, when the Army Air Force was established, the Air Corps had expanded enormously. In particular, the War Department had formulated new goals not only for the production of combat aircraft but for the training of thousands of enlisted military aircrew members to fly and maintain them. The new goals necessitated the creation of scores of new flying schools and the upgrading of facilities at already established schools. It also required the upgrading of facilities such as depots that supported the war effort through maintenance, repair, supply, and testing of equipment.

As two of the Air Corps' most important facilities, Kelly Field No. 2 and Duncan Field experienced unprecedented growth and change between 1936 and 1946. A representative of the Office of the U.S. Inspector General visited Kelly Field No. 2 in August 1937 to determine its condition and potential in the event hostilities occurred. The Inspector General concluded that training at the Advanced Flying School was severely hampered by both obsolete aircraft and physical facilities that were either "on their last legs" or of an inadequate size to accommodate modern aircraft. Nevertheless, he concluded that "Kelly Field was one of the foundation stones upon which the entire personnel structure of the Air Corps rested ..." (Office of History 1980:42,44). It was probably this report that led the Assistant Chief of the Air Corps (and former commander of Kelly Field in the 1920s), Brigadier General James E. Chaney, to recommend the reconstruction of the entire post as soon as possible (Office of History 1980:31,44).

Expansion of personnel and facilities at Kelly Field No. 2 was paralleled by expansion at Duncan Field, the largest and oldest air depot in the United States. Scores of new buildings were constructed there in the early 1940s to support personnel who maintained the new airplanes used to train pilots at the numerous San Antonio flying fields. By early 1943, flying activities at Kelly Field No. 2 had ceased, and Kelly and Duncan fields merged for the first time since 1925 under

the name Kelly Field. The sole function of the new field was maintenance and supply, and flight training moved elsewhere for the first time since 1917. In World War II, Kelly Field became huge industrial complex in which a workforce of more than 30,000 employees overhauled equipment.

Just as demobilization had a profound impact on Kelly Field after World War I, it also had a major effect after World War II ended in August 1945. Thousands of civilian workers resigned or were retired, and the remaining staff's workload turned increasingly from repair to storage. The work effort was also focused on supporting occupation forces in Europe and Japan with air transportation, communication, and weather systems. Subsequent conflicts brought periodic change to Kelly Field, but the dedication of its facilities to the Air Force mission remained consistent (Arias 1988:5,10).

Kelly Field Facilities. At the end of 1936, Kelly Field appeared much as it had since the Armistice of November 1918. Essentially an Albert Kahn-designed, World War I-vintage airfield, Kelly Field had remained virtually unchanged architecturally for almost 20 years. The government's primary contribution to the updating of facilities prior to 1940 was construction of the impressive Miniature Range Building (Building 1625) between 1936 and 1937, a structure that reflected the increasing emphasis the Air Corps placed on bombardment and related training during the 1930s.

The stability of Kelly Field's visual appearance until 1936 was reflected in the programs of its Advanced Flying School, the organization that provided advanced instruction to all cadets in the U.S. Army Air Corps. In the late 1930s, the Air Corps prepared for major military expansion as Europe moved closer to war, and the field was prepared for a major rebuilding project. Significant Air Corps expansion began after January 1939 at Kelly Field, when President Franklin Roosevelt requested \$300 million from Congress for defensive aviation. A large portion of that funding went to new airplanes and other related equipment, and to physical facilities. Another portion went to the development of training programs. Specialized programs were developed to train thousands of new pilots. Between 1939 and March 11, 1943, when the training function ceased, 7,123 men entered and 6,845 men graduated from advanced flight training at Kelly Field. The Navigation School, which operated between 1941 and 1942, graduated 607 men; the Instructors' School, which was activated in August 1942 and moved to Randolph Field in February 1943, graduated 1,691 men.

Organizational and training activities, such as those carried out at the Advanced Flying School, Replacement Training Center, and Reception (Classification) Center, required extensive physical facilities in order to accommodate the large number of new cadets, instructors, administrative and support staff, and training equipment. For the most part, the necessary infrastructure was available at the World War I Kelly Field No. 2 facility to support that mission; however, there was strong interest in redeveloping portions of the base by constructing more permanent facilities that were appropriate to Kelly Field's expanded training role.

As early as 1936, the Shepherd Bill had earmarked \$1.73 million for new construction; the funding became available by mid-1938 (Historical Section, A-2 n.d.:55). New buildings were constructed at the east end of then Kelly Field No. 2's World War I flightline in the vicinity of the 1936-1937 Miniature Range Building, and on "The Hill" west of Leon Creek. Additional facilities were constructed at the west end of the flightline and in the vicinity of the wooden hangars, where temporary tent cities were erected. Both temporary wood frame structures and permanent plastered hollow clay tile structures were built, representing construction methods used widely on Army and Air Corps bases throughout the United States between 1929 and 1943.

A large influx of cadets and a complementary increase in staff prompted new construction projects at Kelly Field. The first of these projects included eight sets of officers' houses (Building Nos. 1750a and b, 1752, 1753, 1755a and b, 1757, and 1758) constructed between 1938 and 1940. The most expensive and ambitious project at Kelly Field entailed construction of two barracks and one academic building erected between 1939 and 1940. The first part in the project cost \$897 million and consisted of a 1,382-man barracks for enlisted men (Building No. 1650) that was called "Buckingham Palace" (later "the Palace") because it was so much more palatial than the tents and wooden barracks the men had been living in. A second, \$368-million-project, conducted concurrently entailed construction of present-day Building 1676, the Cadet Barracks. This facility was a three-story building with a large basement and total area of 90,441 square feet. A third portion of the construction project was present-day Building 1680, the 20,474-square foot, two-and-one-half story Air Corps Academic Building. Located northeast of the Enlisted Men's Barracks and southeast of the Cadet Barracks, the Academic Building was completed on November 1, 1940.

Four new, larger hangers for the new airplanes were constructed between 1939 and 1942. The first of these, present-day Building 1610, was an Air Corps Operational Hanger, completed on June 26, 1940. Three other hangars, Buildings 1612, 909, and 910, were completed in October 1942.

The remaining structures built under the 1939-1942 construction program were clustered around the east end of the flight line. These structures consisted of permanent and temporary facilities, including warehouses, a pump house, a theater, and a photography laboratory.

Kelly and Duncan Fields: Post World War II-Era. When Kelly Field No. 2 and Duncan Field merged in 1943 under the name of Kelly Field, Kelly Field No. 2 lost its original mission, and aircrew training there ceased (Office of History 1980:59). Maintenance and supply became the sole function of the merged Kelly Field, and flight training was moved elsewhere. World War II operations at Kelly Field required a huge industrial complex in which a workforce of more than 30,000 people overhauled equipment. With the greater need for storage space, the entire Kelly Field complex used not only buildings on base, but expanded in 1945 onto a former depot for Fort Sam Houston, the Normoyle Ordnance Depot located just across the railroad tracks to the east of (former) Kelly No. 1.

Demobilization after the end of World War II began in August 1945. Thousands of civilian workers retired or resigned, and the work of the remaining Kelly Field staff turned increasingly from repair to storage. The end of the war also brought with it changes in missions: recognition of the Air Force as a separate department from the Army, co-equal in status with the Army and Navy, and a rechristening of Kelly Field on January 29, 1948, when the facility was named Kelly AFB (McGaffey 1955:12). Greatly expanding in only a decade, operations at Kelly AFB had shifted from the dual missions of flight training and maintenance and supply to a single mission that changed the base into an enormous industrial complex. Although demands placed upon the base resulted in the removal of many World War I-, pre-World War II-, and World War II-era structures, those that remain illustrate the evolution of one of the oldest continuously used Air Force flying fields. Evidence of Kelly AFB's evolution and original mission is visible in the extant buildings constructed between 1936 and 1942 for the purpose of flight training and maintenance and supply. Air Corps Operations Hangar, Building 1610, is one of these remaining World War II-era buildings.

A Brief History of U.S. Military Base Closure. Due to the changing international political scene (i.e., the end of the Cold War), and a resultant shift toward a reduction in defense spending, the Department of Defense must realign and reduce its military forces pursuant to the Defense Base Closure and Realignment Act (DBCRA) of 1990 (Public Law 101-510, Title XXIX). The Act established new procedures for closing military installations in the United States.

DBCRA also established an independent Defense Base Closure and Realignment Commission (Commission) to review the base closure and realignment recommendations. After reviewing those recommendations, the Commission forwarded its list of base closures and realignments to the President, who accepted the recommendations and submitted them to Congress. Since Congress did not disapprove the recommendations within the time period provided under DBCRA, the recommendations have become law. Among those bases recommended for realignment was Kelly AFB, Texas.

The National Environmental Policy Act of 1969 (NEPA) requires the analysis and documentation of potential environmental effects associated with all major federal decisions. NEPA ensures that environmental factors are considered equally with the technological and economic components of a decision, and that the public is fully informed and appropriately involved in the environmental analysis process. Decisions related to BRAC actions are subject to NEPA compliance, and include the timing of impacts, disposal and reuse of property, and all other activities associated with carrying out the BRAC mandate. Although compliance with many other environmental laws is also part of this process, NEPA provides a valuable framework for integrating environmental compliance requirements and providing necessary information to the decision maker, other agencies, and the public.

Because of this realignment, Kelly AFB is again undergoing extensive modifications and redevelopment. Building 1610 is currently scheduled for civilian reuse.

Air Corps Operations Hangar, Building 1610. The first standardized plans for aviation hangars were issued by the Quartermaster Corps in 1911. These hangars were wood frame with segmental roofs. In 1917, the Quartermaster Corps issued new standardized plans for metal frame hangars with galvanized, corrugated metal walls and doors in the side walls. By the 1930s, hangar design had changed again to accommodate larger aircraft, and hangars were larger, rectangular buildings with concrete floors, steel sash windows along their side elevations, and large, sliding metal doors on their end elevations. Hangars constructed after 1934 had segmented arched roofs supported by steel bowstring trusses; the use of a stronger material allowed construction of larger hangars, with longer clear spans. Some of the hangars were clad in brick to render them fireproof. They also incorporated large corner piers, a character-defining feature of 1930s aircraft hangars. Not long after this period, the Army simplified its hangar design, eliminating the large corner piers and sheathing the buildings in asbestos or metal, rather than brick. This later design was used in construction of Building 1610 in 1940, which was originally constructed of asbestos protected metal.

The construction of the Utilitarian-style Air Corps Operations Hangar, Building Number 1610, a permanent hangar, and its shops and annexes, was begun in August 1939, as a modern replacement for Kelly Field's World War I-era hangars. The standardized building was designed by the Office of the Quartermaster General (OQMG) as "an operations hangar and shops with appropriate offices and supply rooms for the Air Corps at Kelly Field, Texas" (National Archives 1940). Ground was marked off for the hangar by August 1939 (Historical Section, A-2 n.d.:55-56). The contractor for the project, Robert McKee of El Paso, began work on October 2, 1939, and finished by June 26, 1940 (National Archives 1940:11-12). The Air Corps Hangar, shops, and annexes cost \$362,700 (National Archives; Real Property Office 1943-1944: n. pg.). The 1936 Sheppard Bill allocated \$945,000 for construction of eight hangars at Kelly Field (Committee on Military Affairs 1936:8; U.S. Government 1936:80:8:8467). The construction completion report indicates that the building of the Air Corps Operations Hangar, shops, and annexes was funded by "C of B. U. and A" appropriations (no year) (National Archives 1940:12).

When the building was completed in 1940, the old control tower was moved from the middle of the World War I flightline on Kelly Field to the roof of the new structure. The 77,852-square-foot building served as the Air Corps Operations Hangar for Kelly Field, a facility where transiting planes landed, and from which pilots could obtain information about weather and flight operations. By October 1943, after flight training had ceased and Kelly Field No. 2 had been combined with Duncan Field, the building functioned as a transient aircraft hangar and control tower. Subsequent changes included the remodeling of the control tower in 1953, renovation of a portion of the interior in 1970, and the replacement of many original doors and windows with aluminum sash and frames on portions of the south and east facades.

Colonel Carl J. Crane. Building 1610, the Air Corps Operations Hangar, is called the "Crane Operations Center." It was named in honor of Colonel Carl J. Crane (1900-1982) in June 1983.

Crane was one of the most important pioneers in instrument and night “blind” flying, and was key in gaining acceptance of instrument training by the Air Corps in 1930. A native of San Antonio, Texas, Crane entered the Air Service as a second lieutenant in 1924. Following flight training at Brooks Field, he graduated from Kelly Field’s Advanced Flying School in September 1925. After a tour with the 1st Pursuit Group at Selfridge Field, Michigan, Crane served as a flight instructor at Brooks, Kelly, and Randolph fields. While at Kelly Field, he served as a technical adviser and pilot during filming of the silent motion picture classic, *Wings*.

Crane, working with William C. Ocker, paved the way for the initial adoption of the instrument flying textbook, *Blind Flight in Theory and Practice*, published in 1932. While at Wright Field in Ohio, Crane designed, co-engineered, and on August 23, 1937, test flew the world’s first fully automatic landing system, earning the Mackay Trophy and Distinguished Flying Cross for this accomplishment.

Throughout his long and distinguished career, Crane flew with almost every experimental and production light data display during his day, and held over 100 patents of aviation instruments. Colonel Crane retired in 1949, but continued active studies in research on flight control and guidance instrumentation.

PART II. ARCHITECTURAL INFORMATION:

A. General Information

1. Architectural Character:

Building 1610 is a large, voluminous, arched aircraft hangar designed in a Utilitarian Style with Art Moderne influences. The building was originally constructed as a facility where transiting planes landed and pilots could obtain information about weather and flight operations. The building continues to serve as a hangar, office and storage space.

2. Condition of the Fabric:

The building is in good condition. Both the exterior and interior have been modified. The interior spaces of the annexes have been significantly altered.

3. Summary Description:

The Air Corps Operations Hangar (Building 1610) is an arched ceiling Utilitarian-style building constructed in 1939-1940 from standardized plans. The superstructure rests on concrete piers and a concrete foundation. Clad with corrugated concrete asbestos siding and capped with a corrugated metal roof (originally sheathed with corrugated, asbestos protected metal), the building utilizes a steel frame, two-way box truss system that extends eight bays (25 feet each) along the length of the building. The hangar is surrounded on three sides by one-story (two stories on the south elevation), concrete and tile brick annexes. These annexes originally contained a library, meteorological offices, station operations, radio room, parachute shop, parachute drying tower, tool room, restrooms and lockers, and various storage and supply rooms. They currently serve primarily as operations offices and storage space. The exterior elevations of the annexes exhibit architectural influences of the Moderne Style including simple horizontal banding at the roof line, vertical corrugated concrete siding, large industrial-type sash windows alternating with smooth concrete panels, and Moderne-style light fixtures. The hangar entrance has large multi-paned, laterally sliding metal doors. A small control tower sits atop the apex of the building's roof front. Most of the building's original materials remain intact; the alterations that have been made have not significantly impacted the building's physical or design integrity.

B. Description of Exterior

1. Overall Dimensions:

The overall structure measures 232 feet by 328 feet, 4 inches, and contains approximately 77,852 square feet. The main hangar area measures approximately 275 feet by 200 feet. The crown of the hangar is 90 feet high. Both the north and south annexes (elevations) measure approximately 26 feet deep by 200 feet long. The east annex (elevation) measures approximately 30 feet, 2 inches deep, by 327 feet, 6 inches long. All three

annexes are approximately 16 feet, 9 inches high, except for the second story of the south elevation which measures 25 feet, 7 inches. The exterior of the original control tower measured 15 feet by 15 feet by 16 feet, 5 inches. The control tower was extensively modified in 1953 and now measures approximately 13 feet, 7 inches, by 14 feet, 11 inches (height undetermined).

2. Foundation(s):

The building sits on a series of concrete piers and a 6-inch-thick concrete slab reinforced with number 6 wire mesh on an 8-inch gravel fill. The real property records indicate that the original 6-inch concrete floor was replaced with a 12- to 18-inch-thick concrete floor in 1970.

3. Wall Construction:

The hangar's walls are constructed of corrugated concrete asbestos siding (intact). The corrugated sheeting was a fireproof industrial material of approximately 45 percent asbestos fiber mixed with concrete. All hangar corners are protected by an asbestos corner roll. The perimeter walls of the annexes are constructed of 10-inch-thick, cast-in-place concrete pierced by a variety of windows and doors. The exterior annex walls are sheathed with corrugated and rubbed (rubbed after application to achieve a certain finish) concrete.

4. Structural Systems, Framing:

The hangar utilizes a steel frame with double laced metal columns supporting a series of two-way box trusses that extend eight bays (25 feet each) along the length of the building. The annexes are concrete framed structures. The extant small control tower is supported by a steel frame sheathed in aluminum and glass.

5. Openings:

5a. Doorways and Doors:

The types of exterior doors originally used are noted on the "as-built" door schedule (Photo TX-3396-AF-19). The majority of the original exterior doors have been replaced. The west elevation of the hangar is primarily composed of six sets of large steel and glass panels that serve as the hangar's main door. The panel doors slide laterally on tracks into pockets positioned at the ends of the end walls. Set within each end panel are pilot entrance doors. Along the south elevation is one set of automatic double doors servicing the base operations lobby and offices, and one single door servicing the southeast wing. This main entrance originally contained steel paneled double doors with 2 over 3 glazing. Above this entrance was a multi-light glazed transom. This transom, including the double doors, has been removed and in-filled with plaster. The single door and opening along this elevation were added to this facade in the early 1980s. The rear (east) elevation was originally punctuated by four sliding metal doors and one single metal

door. The original sliding doors on the southeast half of the rear elevation have been removed and their openings sealed. A stucco entry porch with automatic double doors is now centrally located on this elevation. The northeast portion of the rear elevation retains its original door configuration. Centrally located on the north elevation is one set of double metal doors with multi-paned glazing. The north elevation retains its original door configuration and materials.

5b. Windows:

The hangar roof was originally punctuated with six rows of continuous corrugated glass skylights. These skylights have since been removed and covered with metal roofing material. The east elevation (rear annex) was originally punctuated by eight large window bays measuring approximately 19 feet, 6¼ inches by 8 feet, 6¾ inches. These bays contained standard projected, multi-sash metal windows set between corrugated, concrete piers 8-feet, 4 inches wide. The windows along the southeast half of the rear annex elevation have been removed and the openings sealed. The northeast half of the east annex elevation retains its original fenestration configuration and materials. The north elevation is punctuated by the original nine window bays measuring approximately 17 feet, 1½ inches, by 8 feet, 6¾ inches. These window bays contain the original standard projected, multi-sash metal windows set in corrugated, concrete piers between 8 feet, 4 inches wide. The fenestration configuration of the south elevation has been modified by the replacement of the original projected, multi-paned metal sash windows with smaller, more energy-efficient anodized aluminum framed windows. The control tower fenestration was originally fixed-steel sash windows framing large plates of glass on all four elevations. Although the control tower was modified in 1953, its original fenestration configuration is intact.

6. Exterior Detailing:

Exterior decorative features include the original lighting fixtures (Art Moderne Style) that flank the main entrance into the operations office (south elevation). Original raised concrete lettering on the north (“Engineering”) and south (“Operations”) elevations is extant; however, lettering on the north elevation has been covered over with a metal plate.

7. Stairs:

An exterior metal staircase is attached to the west side of the north elevation, and runs along the hangar roof to the control tower.

8. Roof:

The arched-shape hangar roof was originally sheathed in corrugated, asbestos protected metal, and was punctuated with bands of multi-paned, corrugated skylights. The skylights have since been removed and the hangar is currently covered with V-beam, corrugated metal. Originally stenciled on the roof of the hangar in chrome yellow with a black background field were the words “Kelly Field” (10 feet high) and a directional

arrow pointing north. In the mid-1940s, the roof was painted in a checkerboard pattern with the words "Transient Aircraft" painted on its surface. Mounted on the ridge of the hangar roof is the control tower at the west elevation and the weather tower at the east elevation. The annexes are capped with flat, parapeted roofs with concrete copings and composition gravel. A thin concrete scupper is located on the south elevation's second story. The small control tower was originally capped with a low-pitched, hipped, aluminum roof. The modified tower is now crowned by a flat metal roof.

C. Description of Interior:

1. Floor Plan(s):

The interior of the hangar is an enormous, unimpeded space. Building 1610 retains most of its original interior configuration, which is rectangular in shape, open, and surrounded by annexes on three sides. Concrete block wall offices, added in the late 1960s, run along most of the hangar's interior south elevation and connect through to the south annex. The interior configuration of the three annexes has been extensively modified. The interior configuration of the control tower, located on the roof at the west elevation, retains its original square-shaped configuration. (See attached floor plans.)

2. Flooring:

The flooring of the hangar area is composed of large concrete slabs on grade. Poured concrete was also used throughout the north and south annexes as the flooring material. The flooring of the east annex was originally asphalt block flooring (A.B.F.), except in the transformer room and parachute drying tower, which have cement floors. Carpeting or linoleum has been installed over the original flooring materials in most of the annex areas. Tongue and groove board flooring was used in the control tower.

3. Stairways:

The original metal catwalk inside the hangar leads from the southwest corner of the hangar to the control tower along the western elevation. An additional metal catwalk, installed in 1957, runs parallel to the hangar's interior roof ridge from the control tower (west elevation) to the weather tower (east or rear elevation). There were originally two internal stairways constructed in the two-story south annex. Stairway number 2 (Photo TX-3396-AF-21), on the far southwest side of the two-story annex, has been completely removed. Stairway number 1 (Photo TX-3396-AF-21), on the far southeast side of the two-story annex, is intact with the original square, metal newel post visible at the upper landing. The treads and risers of this staircase are now carpeted. The control tower was designed with a metal spiral staircase (extant) leading from the control tower platform to the observation deck (condition of the spiral staircase unobtainable).

4. Wall and Ceiling Finishes:

The interior of the hangar is supported by a two-way box truss system. This truss system and corrugated metal roofing material is visible from inside the hangar. The ceilings of the annexes are inverted ribs of concrete, many of which were originally covered with metal lath and plaster and 2-inch insulation. Acoustical drop ceilings with fluorescent lighting have been installed throughout most of the annex areas.

The finish of the hangar walls consists of corrugated concrete asbestos siding and concrete over masonry blocks. The primary annex interior walls were constructed of 8-inch hollow clay tiles finished with plaster. Many of the office spaces were further divided by metal partition walls that have been removed. The original primary walls of the annexes are now finished in an array of modern building materials including wood paneling, stucco, wallpaper, and drywall. The interior of the control tower was originally lined with ½-inch asbestos on 1-inch insulation. A current interior assessment of the control tower was not conducted (due to safety considerations).

5. Openings:

a. Doorways and Doors:

Most of the original interior doors throughout the hangar and annexes have been replaced or modified. The types of interior doors originally used are noted on the "as-built" door schedule (Photo TX-3396-AF-19). The interior of the hangar area was originally punctuated with 16 interior door openings: Five along the north elevation, eight along the east elevation, and three along the south elevation. These doors provided access from the annexes into the hangar area. Currently, the hangar interior contains six doors along the north elevation, seven along the east elevation, and five along the south elevation. The doors along the north elevation are original; those along the east and south elevations have been replaced.

b. Windows:

There is one interior window located along the east elevation of the hangar. The window is an industrial sash 12-light window. The window and hardware appear to be original.

6. Decorative Features and Trim:

There are no original interior decorative features or trim.

7. Hardware:

Much of the original metal door jamb and window hardware is intact in the north annex and northeast half of the east (rear) annex. Elsewhere in the building the hardware has been replaced.

8. Mechanical Equipment:

a. Heating, Air Conditioning, Ventilation:

Building 1610 is supplied with three gas lines. The entire structure was originally heated by gas-fired air heating cabinets. Ventilation was provided by a ridge ventilator, located at the ridge of the hangar roof line, and a small steel sash window located on the east elevation at the apex of the arch roof. Additional ventilation was later provided to the building by exterior louvered vents installed in the asbestos walls along the north and south elevations. The ventilation, heating, and cooling systems have all been upgraded.

b. Electrical/Lighting Fixtures:

The building was originally lit by incandescent lighting with one electrical line of 110/220 volts. All of the original lighting fixtures throughout the annex areas were gradually replaced with fluorescent-type lighting fixtures. Single rows of industrial-type shop lights (replaced) are suspended from the trusswork of the hangar ceiling.

c. Plumbing:

Building 1610 is supplied with four sewer lines and two water lines. There were originally five restrooms located within the annex areas. One restroom, on the second story annex, has been modified into office space. All restrooms have been reconfigured and upgraded.

9. Original Furnishings:

There are no original furnishings.

D. Site

1. Orientation and General Setting:

The hangar is located west of Luke Drive, along the east side of the runway.

PART III. SOURCES OF INFORMATION:

A. Architectural Drawings

1. Original Plan Numbers and Descriptions:

There are many linen originals and sepia copies on file. These plans are on file at the Base Engineer's Office, Kelly AFB, San Antonio, Texas. The series "plan" number for the Air Corps Operations Hangar, Building 1610, is 6890-XXXX.

2. Additions/modifications/alterations Architectural Drawings (plan numbers and descriptions):

Several addition/modification/alteration drawings and plans are on file at the Base Engineer's Office, Kelly AFB, San Antonio, Texas.

B. Historic Views, Photographs:

All ephemeral material related to Building 1610 is housed at the Office of History, Kelly AFB. Related ephemeral material includes outdated real property records, numerous photographs, and base articles.

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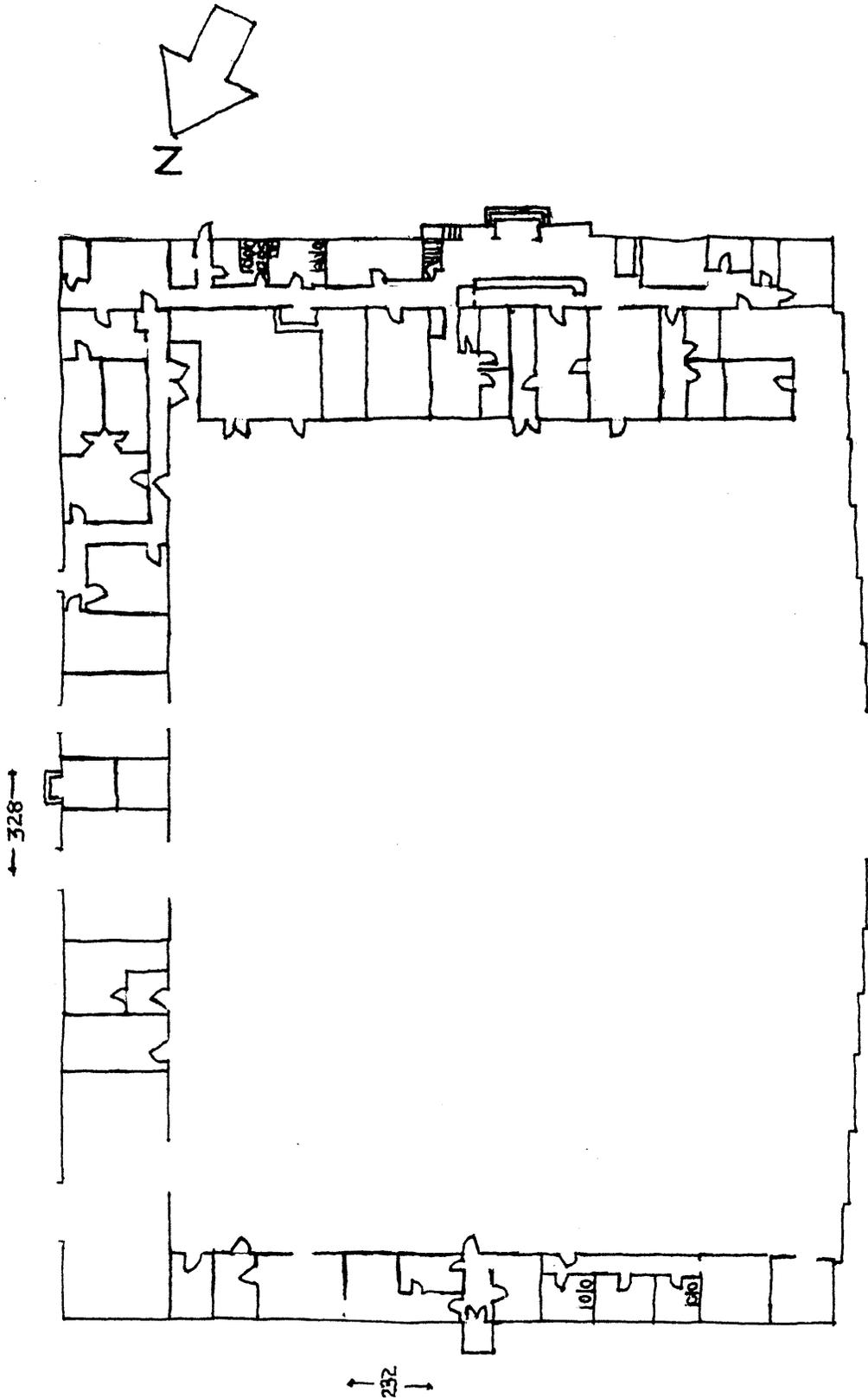
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Local Sources

FLOOR PLAN

BUILDING 1610 AIR CORPS OPERATIONS HANGAR

DRAWN: MARCH 12, 1997



FIRST FLOOR PLAN

PART IV. PROJECT INFORMATION

This HABS, Level II documentation for Building 1610, located at Kelly AFB, San Antonio, includes photo documentation, documentation of existing drawings and written text. The recordation conforms with the standards of the HABS guidelines set forth by the National Park Service, U.S. Department of the Interior.

Federal Agency: U.S. Army Corps of Engineers, Fort Worth District

Project Name: Operations Hangar, Building 1610
Historic American Buildings Survey, Level II

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