

Reese Air Force Base, Maintenance Hangar
(Building No. 70)
West Side of N. Davis Drive
Lubbock Vicinity
Lubbock County
Texas

HABS No. TX-3486-A

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDING SURVEY
Southwest System Support Office
National Park Service
P.O. Box 728
Santa Fe, New Mexico 87504

HISTORIC AMERICAN BUILDING SURVEY

REESE AIR FORCE BASE, MAINTENANCE HANGAR (BUILDING No. 70)

HABS No. TX-3486-A

Location: Reese Air Force Base
West Side of N. Davis Drive
Lubbock Vicinity,
Lubbock County, Texas

USGS Wolfforth Quadrangle
13 775260 3720700

**Present
Owner:** United States Air Force

**Present
Occupant:** United States Air Force

**Present
Use:** Offices, Storage

Significance: Building 70 at Reese Air Force Base (AFB) is significant due to its association with World War II. The building served as a hangar for the repair and maintenance of the aircraft used for training at the base. The structure has been modified, but it still retains a great deal of its historic integrity and character. The building is also a variation of the Demountable Hangar 1 (DH-1) type Air Force structure. Building 70 is a good example of a World War II era hangar, and it served an important function in the base's role as an air training facility during World War II.

Description: Building 70 was built in 1941-42 as one of a set of three identical hangars. The hangar sits parallel to the concrete apron at Reese AFB and has been altered by the addition of a concrete structure on the east elevation of the building.

Building 70 has a shallow arched roof composed of two sets of trusses that meet in the middle of the building to form a single roofline. The roof has a straight, shallow slope in the center eight bays of the hangar. Towards the outer two bays of the hangar, the roof curves downward. The roof is covered by corrugated, galvanized iron and five-ply built-up roofing. The roof structure is supported by bowstring trusses that rest on steel columns, forming ten bays. The west elevation faces the runway apron and contains a twelve-leaf hangar door that slides into narrow door pockets on either side of the entry. The doors are covered with sheet metal panels; an original pedestrian door is located on each end of the hangar door. The pockets are the same height as the doors, and extend beyond the original exterior walls of the north and south sides. The north elevation retains excellent historic integrity, with eight paired nine-pane metal industrial windows. The main hangar space remains open with the original roof structure exposed on the interior.

The south elevation of the building has been more extensively altered. A small, narrow concrete block addition was added to this side of the building in 1951. The addition, which stretches the entire length of the hangar, has a shed roof covered with asphalt rolled roofing and a series of metal doors and no windows. The east elevation of the hangar is composed of the rear elevation of the building's main arched truss-covered space and a concrete block one-story addition. This block section was added to the rear of the building in 1992.

The interior of the building is composed of the main hangar space and two subsidiary spaces. The main hangar space is largely intact and open, as it was originally constructed. The south side concrete block addition is a small space; it contains a room with file drawers and copying equipment. The rear addition has a series of administrative offices and conference rooms.

History:

After ten years of campaigning by the people of Lubbock, Texas, the city was selected as a site for a new air training base. The base was part of a military mobilization plan that came into effect after the fall of Poland in 1939 and the declaration of war on Nazi Germany by Britain and France. By April 1940, Congress had ordered the expansion of the United States Army Air Corps. The number of pilots trained annually increased from 7,000 to 30,000. On June 26, 1941, the Air Corps Advanced Flying School was officially established at Lubbock.

Preliminary work on building the base began on July 24, 1941. Construction of the base was under the authority of the United States Engineer's Office at Caddo, Colorado, during the planning stages of the project. The Caddo office was in control of the project through November 1941. By February 1942, oversight of the project had been transferred to the United States Engineer's Office in Albuquerque, New Mexico. By January 1942, the base was 85 percent complete. The target completion date for the buildings was January 4, 1942, but construction continued until April. Construction of an additional hangar and some minor improvements to the base were carried out in late 1942 under a supplementary contract.

The primary contractor for building the base was Lambie, Moss and Page, a firm which was awarded a lump sum contract for \$3,973,365. W.S. Moss and W.G. McMillan of Lubbock were hired as building construction subcontractors. Their actual role in building the base is somewhat unclear. Cost estimates for exterior finishes on the base's wood temporary buildings point to McMillan's involvement in their construction. Existing documentation does not identify whether McMillan or Moss did work on Buildings 70, 52, and 92. Over 200 buildings were built on the base, ranging in function from hangars to machine shops and barracks, administrative offices, mess halls, and recreation buildings. The majority of structures constructed were wood-frame, temporary buildings that were intended to have a lifespan of approximately five to seven years. Building 70 and its twins, Buildings 52 and 92, were, in contrast, built of more permanent steel and galvanized iron. However, much of the fabric of these hangars was bolted rather than spot-welded together, a feature that would have made it easy to disassemble the hangars for re-location to another site. This emphasis on temporary buildings and removable hangars indicates that the government may have seen this base as a

non-permanent facility to be decommissioned shortly after the end of the war.

The base was shut down on December 31, 1945. The base was then converted to a housing area for veterans and their families and a meeting place for the National Guard, Air Force Reserve, and the United States Navy. On August 1, 1949, the Air Force officially re-activated the base, and the 3500th Pilot Training Wing from Barksdale Air Force Base, Louisiana, was transferred there by October 5, 1949. The field was re-named Reese Air Force Base on November 5, 1949, and Reese AFB was declared a permanent installation on Armed Forces Day, 1950. The base continued training pilots in World War II era twin-engined B-25 aircraft until 1959, when jet training aircraft were adopted for all training activities on the base. The base continued its pilot training mission until its closure in 1997.

The overall configuration of Buildings 70, 52, and 92 generally conforms to plans for the DH-1 demountable mobilization hangar. This hangar design was composed of two segmental arched truss roofs supported on a series of steel columns. The hangar, built in individual steel unit sections, could be assembled and disassembled for easy relocation and re-use at another location. The DH-1 was flexible and versatile, and was a frequently used hangar design during World War II. The development of the DH-1 began in 1939, when the Army Air Corps began to show an interest in portable steel hangars. With the possibility of United States involvement in World War II becoming more and more likely, the government needed to be able to build military bases and training facilities quickly. United States aircraft were designed to withstand outside storage in temperate climates, but maintenance activities needed to be carried out indoors. Maintenance hangars were, therefore, an essential feature of any major air base. The flexibility of prefabricated portable hangars would make relocating bases and air resources easier.

Beginning in November 1939, the Army Air Corps began receiving plans for portable hangars from individuals and private companies across the United States. These designs varied widely, from relatively conventional hangar designs to unconventional experimental structures. Those submitting plans ranged from large, steel, bridge and portable building manufacturing companies to engineers and architects in private practice. Included in this group was the Star Manufacturing Company, based in Oklahoma City, Oklahoma. Star Manufacturing's main business was the construction of prefabricated steel buildings, especially hangars. In September 1940, Douglas Rowland, the president of Star Manufacturing, wrote a letter to Brigadier General Jacob Fickle, Chief of the Army Air Corp's Training Division. Rowland emphasized his company's experience in building prefabricated hangars, and enclosed a brochure illustrating a number of hangars built by his firm.

Prefabricated hangar designs continued to be received by the Army Air Corps through 1941. By March 1941, the investigation into portable hangars was being overseen by Colonel Frank M. Kennedy of the Army Air Corps Buildings and Grounds Division. On March 7, 1941, Colonel Kennedy issued a memo to a Colonel Tomkins reporting that the Air Corps needed to build approximately

thirty-six to thirty-eight new hangars for air training schools. Colonel Tomkins' military assignment and the reason for his interest in portable hangars was not made clear in the memo. Colonel Kennedy stated that building a large number of small inexpensive hangars would be more efficient than building a smaller number of large permanent hangars at these installations. He thought that a good steel portable hangar could be built for about \$45,000, and mentioned that such prefabricated buildings were being manufactured by Star Manufacturing and a number of other companies. In May 1941, Colonel Kennedy indicated that a drawing for the DH-1 portable hangar had been approved. He stated that Star Manufacturing had provided drawings that had been used by the Army Air Corps to prepare drawings for the DH-1. Colonel Kennedy indicated that Star Manufacturing had enough steel in stock to build eighteen of the hangars, and mentioned the locations of six air training bases where the new hangars were to be built: Macon, Georgia; Dothan, Alabama; Victoria, Texas; Taft, California; Bakersfield, California; and Phoenix, Arizona. Searches of current Air Force directories and consultation with the Air Force Historical Research Agency has indicated that none of these bases are still in operation.

The surviving drawings of the DH-1 developed by the Army Air Corps appear to be based on a hangar built by Star Manufacturing at the Texas Aviation School at Hicks Field in Fort Worth. The Hicks Field hangar was illustrated in the brochure mailed by Star Manufacturing to the Army Air Forces in September 1940. The hangar has the same double segmental roof with a small peak in the middle seen in the standard drawings of the Army Air Corps DH-1 hangar.

By the time Lubbock Field was built, the DH-1 was being used at Army Air Corps training bases around the United States. Cost estimates for all three DH-1 hangars at Lubbock came to \$204,961 according to July 1941 correspondence from the United States Engineer's Office in Caddoa, Colorado. This would put the cost of each hangar at \$68,320, considerably higher than the \$45,000 cost for the DH-1 envisioned by Colonel Kennedy. By August 1941, the budget for the hangars at Lubbock had been set at \$140,000. A memo from Lieutenant Colonel James Shively of the Army Air Corps Building and Grounds Division to the Chief of the Army Air Corps indicated that the Army Air Corps originally intended to build three DH-1 hangars at Lubbock, but the cost was prohibitive, so the number of hangars was reduced to two. However, in March 1942, Lieutenant Colonel Harry S. Bishop of the Lubbock Sub-Depot wrote a letter to the Chief of the Field Service Section at Wright Field in Dayton, Ohio, claiming that he desperately needed another maintenance hangar at Lubbock due to the dusty conditions there. The dusty conditions, according to Lieutenant Colonel Bishop, were making maintenance of propellers, landing gear, and other mechanisms difficult. Although further correspondence on this subject has not been located, Lubbock today has three DH-1 hangars, Buildings 70, 92, and 52. Therefore, it appears that the base was successful in obtaining authorization for a third hangar in 1942. A 1944 history of the base indicates that in addition to the original construction phase of the base, a "supplementary contract" was made for the construction of "another hangar." The same history also states that among the improvements to the base in 1942 was "additional work on hangars." It is not known which of the three DH-1

hangars was the last to be constructed.

In scale and overall layout Building 70 at Reese AFB conforms to the DH-1 type, but it was not built completely according to the DH-1 specifications. A set of standard drawings for the DH-1 has been located in the files of Reese AFB, and was probably used as an overall model for the construction of the building. However, the trusses of the standard DH-1 are two segmentally arched trusses supported by steel columns at the sides and middle of the building. The center roofline, composed of two segmental curves, also has a small triangular peak in the middle of the building. Building 70 at Reese AFB is also composed of two trusses supported by steel columns on the side walls of the building and in the middle. In contrast to the standard DH-1, the trusses of Building 70 are curved at their outer edges. One third of the way through the length the trusses lose their curvature, creating a flat, low-pitched section at the top of the roof. The trusses each appear to be built in three sections. Most of the component parts of the truss roof are bolted or riveted together rather than spot-welded. This indicates that the hangar was definitely intended as a building that could easily be disassembled and re-assembled at alternate locations if necessary.

It is thought that a local engineering firm may have designed alternate trusses for the Reese AFB hangars; this was not unusual. A memo of May 7, 1941, to the Office of the Chief of Engineers from Major John Hardin of the Corps of Engineers Construction Division stated that the Air Corp's DH-1 plan was intended to "...inform manufacturers of prefabricated hangars of the type of structure desired. It is therefore only intended as an outline. The successful bidder is to furnish complete drawings." The standardized DH-1 hangar plans found in Reese AFB files include the statement: "Trusses of other types, complying with specifications, will be permitted." From these comments, it appears that the drawings for the DH-1 were meant as a general guide, and that individual manufacturers were free to deviate from the design as long as the results conformed to the minimum Army Air Corps hangar specifications. The author of the changes in the Lubbock hangars remains unknown, although Lambie, Moss and Page as prime contractors seem to be the most likely candidates. The motivation behind the changes is also unknown. There may have been a shortage of the trusses illustrated in the Air Corp's DH-1 drawings, or the party responsible for the changes may have thought that the alternate truss was more efficient or cost effective.

A small hangar with a relatively flat roof and a low clearance made sense at Lubbock, where it may not have at other bases. The training aircraft primarily used at the base in the early 1940s, such as the twin-engined AT-9, were relatively small and had a fairly low clearance. Since the base's primary mission was flight training, it did not require large hangars with high roof levels to accommodate larger bomber or transport aircraft.

On February 25, 1942, the first class of seventy-four cadets arrived at Lubbock Army Air Training Field. Throughout World War II, Building 70 served as a maintenance hangar. It provided shelter for the vital activities of inspecting,

maintaining, and repairing the aircraft. The hangar included a U-shaped track attached to the bottom of the building's trusses. This track was equipped with hoists for lifting and moving aircraft engines and components around the hangar. With at least seventy pilots engaged in flight training at all times, Lubbock Field needed a large fleet of operational training aircraft. Adequate aircraft maintenance and repair facilities were essential to the base's mission to train as many pilots as possible for service in World War II.

Reese AFB was closed from December 1945 to August 1949. During that time, the base was used for veterans' housing and for military reserve and National Guard meetings. We do not know how Building 70 was used in these years. The base resumed pilot training activities in October 1949. Pilot training continued at the base in the early 1950s in connection with escalation of air activity in the Korean War. In 1951, a concrete block addition was completed on the south elevation of the building. This addition is currently being used as a storage area for drawings and copying equipment, but its original use was as an office space. Building 70 continued to serve as a maintenance hangar from the 1950s into the 1990s. No other major alterations were made to the building until 1992. In March 1990, Lockheed Support Services assumed responsibility for all aircraft maintenance at Reese AFB. As part of their maintenance contract, Lockheed was allowed to use Air Force facilities for aircraft maintenance and administration, including Building 70. In 1992, the rear metal shed roof section of the building, constructed in 1941-42, was completely demolished by the Air Force. A new shed roof addition, much larger, was built on the site of the demolished section by the Air Force to provide administrative offices and conference rooms for Lockheed personnel.

In 1995, Reese AFB was recommended for closure, and on January 24, 1997, the last class graduated from Reese AFB. In September 1997, the 64th Flying Training Wing at Reese AFB was officially de-activated, and the base was formally closed on September 30. Some Air Force staff have remained at Reese AFB to facilitate the conversion of the base to a civilian facility. Since the closure of the base, the rear shed roofed addition of Building 70 has served as the offices for Air Force personnel who have remained to oversee the conversion of the facility to a civilian industrial park. The central space of the building is currently being used as a storage space for excess furniture and equipment from the base. Building 70 is scheduled for divestiture from federal ownership at this time, and the Air Force has no plans to demolish the structure. Plans for the civilian industrial park are not sufficiently advanced enough to indicate what the future of Building 70 will be once the Air Force has turned Reese AFB over to civilian authorities.

Sources:

"Central Correspondence Files, U.S. Army Air Forces 1939-1944". Record Group 18, entries 293-295. National Archives, College Park, Maryland.

Hardlines: Design and Delineation. "Historic Building Inventory and Evaluation, Reese Air Force Base." April 1997. Report on file with author.

Hardlines: Design and Delineation. Site Inspection, January 1998.

"History of Lubbock Army Air Field to 7 December 1941." Lubbock Army Air Field, 1941. On file at U.S. Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.

Lubbock Army Air Field. Stress Diagram: Type DH-1 Hangar with Monorail. Girder diagram and plan view. February 23, 1944. Reese AFB Civil Engineering Files.

Treadaway, Rupert G. "History of Lubbock Army Air Field to 1 March 1944." Lubbock Army Air Field, 1944. On file at U.S. Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.

"U.S. Army Corps of Engineers Files." U.S. Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.

War Department, Office of the Chief Engineer. "Proposed A.C. Hangar for Training Fields - Type DH-1." Outline plans and elevations. June 16, 1941. Reese AFB Civil Engineering Files.

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