

BROOKS AIR FORCE BASE, BUILDING NO. 110  
(Brooks Air Force Base, Environmental Science Laboratory)  
7730 George Schafer  
San Antonio  
Bexar County  
Texas

HABS TX-3521-B  
*HABS TX-3521-B*

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY  
SOUTHWEST SYSTEM SUPPORT OFFICE  
National Park Service  
U.S. Department of the Interior  
PO Box 728  
Santa Fe, New Mexico

HISTORIC AMERICAN BUILDINGS SURVEY  
BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)

HABS No. TX- 3521-B

Location: 7730 George Schafer  
San Antonio  
Bexar County  
Texas

~~USGS Southton, Texas Quadrangle (7.5')~~

~~Universal Transverse Mercator Coordinates: 14.552882, 3246648~~

*Google Earth Lat/Long 29.35025500, -98.455491*

Present Owner: Brooks Development Authority (BDA)

Present Occupant: U.S. Air Force School of Aerospace Medicine (USAFSAM) Department of Preventive Medicine

Present Use: Medical offices

Significance: Building 110 (Environmental Science Laboratory) was an important component of the USAFSAM campus at Brooks Air Force Base (AFB). The facility was used to perform environmental and clinical studies related to aerospace medicine. The last major laboratory constructed at the USAFSAM complex, Building 110 was specifically built to provide bed-rest studies (weightlessness studies) for the National Aeronautics and Space Administration (NASA). The laboratory supported USAFSAM's important work in space research, as well as in clinical and military applications. The building continues to serve the Air Force as a facility for environmental and clinical studies.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date(s) of erection: 1973
2. Architect: Bernard Johnson Engineers, Inc.
3. Original and subsequent owners: Air Force
4. Builder, contractor, suppliers: Unknown
5. Original plans and construction: Original plans are on file with the BDA, 8030 Challenger Drive, Brooks City-Base, San Antonio.

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 2)

6. Alterations and additions: Building 110 has undergone some minor modifications in interior finishes and spatial arrangements, but has suffered no major additions.

B. Historical Context:

Building 110 was among four buildings erected during the third phase of construction (1966-73) at USAFSAM at Brooks AFB. The multiple-building complex represented the base's expanding role and mission as one of the largest aerospace medical research centers in the world. With research and development goals ranging from space to warfare, USAFSAM has played a central role in the mission of the Air Force as well as NASA. Though the USAFSAM campus was constructed in 1959, the history of Brooks AFB has involved multiple missions beginning with the training of Army pilots in World War I to reserve flight training during the Cold War.

**Establishment of Brooks Field and Early Aviation Training, 1917-31**

Established on an 873-acre tract of land in San Antonio, Texas, in November 1917, Kelly Field No. 5 grew out of the increasing wartime need for cadets and trainers. In February 1918, the airfield was officially renamed Brooks Field in honor of Cadet Sidney Johnson Brooks, Jr., a San Antonio native who died in a plane crash at Kelly Field No. 2 in 1917. The new commander of Brooks Field, Major Henry Conger Pratt, oversaw the installation's mission of preparing up to 5,000 airmen for wartime service in Europe. In addition, Brooks trained flight officers as teachers of a new British training regimen known as the Gosport System, which utilized innovative controls and speaking tubes to improve communication between instructors and cadets while in the air. The use of the Gosport system at Brooks Field convinced the War Department in October 1918, to incorporate the experimental system at Brooks Field into all Army airfields.<sup>1</sup>

In May 1919 the Observation School at Camp Ben Wise in San Antonio, which trained cadets in the use of aerial observation, moved to Brooks Field. As one of five national balloon observation schools, Brooks Field provided surveillance along the U.S.-Mexico border utilizing the 16<sup>th</sup> Airship Company and the 4<sup>th</sup> and 5<sup>th</sup> Balloon companies. The balloon and airship program at Brooks Field, despite the initial investment of manpower and expense, proved to be a short-lived experiment for the San Antonio region. Several accidents involving explosions forced the school to close in 1922.<sup>2</sup>

The decision to remove the Balloon and Airship Observation School was part of a 1920 Army Reorganization Bill which stipulated that all flight training for the country would be centered in San Antonio air fields, including Brooks Field. By June 1922, Brooks Field was classified as the only Primary Flying School in the country as a result of the consolidation of two former flying schools in California and Florida. From 1922-31, Brooks Field earned the reputation of being one of the premier aviation training sites in the country and was responsible for developing the young Army Air Service at a crucial period of its growth.

The system established in 1922 required all military aviators to begin their basic flying training at Brooks Field, with the graduating class moving on to the Air Service Advanced Flying School at Kelly Field. The graduating classes at Brooks later formed the basic structure of the Air Corps for decades to come. The school graduated numerous important aviators including Charles Lindbergh, Frank M. Hawks, Nathan

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 3)

Twining, Jimmy Doolittle, and Barney Giles. Instructors at Brooks were among the most experienced and talented aviators in the country, including Claire Chennault of the famed "Flying Tigers," Russell Maughan and Elwood Quesada.<sup>3</sup>

In addition to its celebrated graduates and instructors, Brooks Field was also the site of important advances in aviation. In April and September 1929 Brooks Field held public demonstrations of one of the earliest paratroop warfare experiments. In 1930, Colonel William C. Ocker devised a device allowing pilots to fly "blind" with the use of instruments inside the cockpit.<sup>4</sup>

#### **School of Aviation Medicine (SAM), 1926-31**

In 1926, SAM was relocated from Mitchell Field, New York to Brooks Field in an effort to improve pilot performance and to learn firsthand from pilots about the medical factors affecting flight. From 1926-31, flight surgeons at SAM generally acted as physicians first and teachers second; their main responsibility was to direct physical examinations to determine the condition of cadets for flying.

In 1931, SAM and the Primary Flying School moved to the newly created Randolph Field in San Antonio, Texas, ending Brooks Field's important aviation training mission. In the 1930s, Brooks was designated a center for observation training and housed several observation squadrons. Escalating tensions in Europe led to the establishment of an Air Corps Advanced Flying School in early 1941, which focused on training pilots in observation skills using single-engine aircraft. Because of lessons learned early in World War II, the Army Air Corps reassessed the importance of aerial observation, placing greater importance upon bombing and pursuit aircraft training. As a result, in 1943, Brooks Field began a training program for the new B-25 bomber, which greatly aided the war effort. Brooks Field became Brooks AFB in 1948 and assumed a new postwar mission as a reserve flight training center which it maintained until 1960 when all flight activities ceased.<sup>5</sup>

#### **SAM: the Space Program to Vietnam, 1959-69**

In 1959, SAM, now known as the School of Aerospace Medicine (SAM) was reassigned to Brooks AFB as part of a new Air Force mission to consolidate its aviation and space medicine efforts at one base. From 1959-69, Brooks AFB, as part of the Aerospace Medical Division (AMD), played a key role in providing NASA and the Air Force with innovative and important space medicine research, ensuring the success of the country's efforts in space exploration. Research at Brooks AFB utilized a range of laboratories and research facilities to perform experiments ranging from altitude and pressure experiments to space food nutritional studies. In addition to direct contributions to NASA's Mercury, Gemini, and Apollo programs, Brooks focused much of its space medicine efforts on the Air Force's military space program, the Manned Orbiting Laboratory (MOL). By the mid-1960s, researchers and physicians at Brooks AFB increasingly became involved in the Vietnam War, forcing SAM and AMD to manage dual missions of space and warfare.

#### **The USAFSAM Campus**

In 1952, with its intention to relocate the crowded facilities at Randolph AFB to Brooks AFB, the Air Force required a new master plan accommodating the new "Aeromedical Center." Early in the planning

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 4)

stages, officers of the Air Force Headquarters in Washington, D.C., had a clear notion of the type of facility they wanted, distinguishing it from other Air Force installations: "Consideration should be given to permanence and preeminence of this facility as an academic institution . . . The quality of construction should be comparable to that of the leading medical institutions in the United States."<sup>6</sup> In designing the master plan for such an institution, officers of the Headquarters of the Air Force made an unqualified recommendation for the St. Paul, Minnesota firm of Ellerbe & Company, which already had two years experience with an earlier Brooks AFB master plan:

The Ellerbe Company, because of the design over the past twenty-five years of the varied and highly specialized diagnostic research and hospital facilities for the Mayo Clinic at Rochester, Minnesota, is considered eminently qualified to continue this project.<sup>7</sup>

Utilizing the master plan designed by the Ellerbe Company, Brooks AFB underwent three phases of construction beginning with the erection of five buildings in 1959. The second phase occurred from 1961-64 and included six buildings. The third phase, occurring between 1966-73, consisted of four buildings, each utilizing a separate architect. According to Lieutenant General George Schafer, who served at Brooks AFB as Commander of USAFSAM from 1967-69 and as Commander of AMD from 1971-75, these four buildings were erected in a piecemeal fashion, in response to the scientific needs of the research community at USAFSAM.<sup>8</sup> In addition to Building 110 (Environmental Science Laboratory), the third phase of construction included Building 176 (Electronics Laboratory), Building 167 (Equipment Repair Shop), and Building 186 (Radiation Science Laboratory).

### **Building 110**

Building 110 was erected in 1973 and was designed in 1971 by Bernard Johnson Engineers, Inc. of Houston, Texas (currently Bernard Johnson Young, Inc.). Originally founded in 1947, Bernard Johnson Engineers is one of the nation's oldest municipal engineering and architectural consulting firms. The firm has historically focused on providing municipal engineering and architectural services to government entities.

Building 110 was the last major laboratory built within the USAFSAM complex. Constructed at a cost of \$1,851,000, the building was designed specifically to house bed-rest studies (weightlessness studies) for a NASA contract. Space for twenty beds plus monitoring equipment was designed to aid researchers in the studies. The first floor of Building 110 included offices for junior and senior scientists as well as laboratory spaces including: flight monitoring methodology; psychophysiology; single operator performance laboratories; crew operations performance; eye lanes; psychophysics; a laser laboratory, and a radioisotope laboratory. The second floor was designed to include a central environmental laboratory, a metabolic analysis laboratory, cardiovascular dynamics laboratory, cardiac catheterization laboratory, medical examination rooms, as well as additional office space for scientists. Building 110 continues to serve as laboratory space for clinical and environmental studies.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: Building 110 is a two-story, flat-roofed, windowless building designed to suit a highly specialized medical use. Faced with red-orange brick set in a running bond, the building is generally reflective of the International Style of the rest of the USAFSAM campus.
2. Condition of fabric: Building 110 is in good condition.

B. Description of Exterior:

1. Overall dimensions: Building 110 is irregular in plan, with two floors and a rooftop mechanical penthouse. The building measures 218'-0" x 97'-0", and 28'-6-½" from finished first floor to the top of the structure. A generator shed is appended to the east facade.
2. Foundation: The foundation is of concrete pier-and-beam construction with continuous perimeter beam. Piers are typically spaced approximately 27'-9" on center.
3. Walls: Exterior walls are of face brick set in a running bond with concrete back-up.
4. Structural system, framing: Building 110 has a steel-frame construction system based on 8" wide-flange steel columns. The floors and roof are concrete slab on metal deck, with open-web steel bar joists supported by steel wide-flange beams.
5. Porches, stoops, balconies, bulkheads: The main entry is on the east facade, and consists of a concrete double entry stair rising to the central double-door storefront unit. The stairs are united by an exterior brick wall rising at the height of the aluminum handrail. The entry is sheltered by an aluminum canopy supported by metal posts. Four secondary entries (one each on north and east facades and two on south facade) consist of concrete steps, concrete porch, brick walls, and a flat-roofed aluminum porch cover supported by steel posts. Steps are perpendicular to axis of building entry. A loading dock on the east facade is reached by an exposed concrete ramp rising from ground level at the north side of the building.
6. Chimneys: None.
7. Openings:
  - a. Doorways and doors: The main entry consists of a pair of 3'-0" x 7'-0" aluminum and glass single-acting doors set in an aluminum frame with sidelights and transom. Secondary entrances on the north and south facades have single 3'-0" x 7'-0" hollow

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 6)

metal doors in steel frames, while the east entry has a pair of 2'-6" x 7'-0" hollow metal doors in steel frames. Other exterior doors include single and paired hollow metal doors with louvers in steel frames.

- b. Windows and shutters: None.
  - c. Other openings: A row of 2'-9<sup>5</sup>/<sub>8</sub>" x 7'-<sup>5</sup>/<sub>8</sub>" louvered metal panels ventilate the space above the second floor ceiling. A 7'-0" x 11'-0" louvered metal panel on the south facade provides make-up air to a mechanical room on the first floor.
8. Roof:
- a. Shape, covering: Building 110 has a flat roof with built-up roofing and a metal gravel-stop edge.
  - b. Cornice, eaves: None.
  - c. Dormers, cupolas, towers: Building 110 has a rooftop mechanical penthouse, measuring 57'-2" x 31'-8" x 10'-5<sup>1</sup>/<sub>2</sub>" high. The exterior material is insulated metal siding, and the penthouse roofing is the same as the main roof.

C. Description of Interior:

- 1. Floor plans:
  - a. First floor: The first floor contains two north-south corridors and two east-west connecting corridors providing access to offices, laboratories, and support areas.
  - b. Second floor: The second floor is notable for its semicircular suite of examination rooms at the south end of the floor. It also features two north-south corridors, and one east-west connecting corridor. Spaces include laboratories, examination rooms, and support areas.
- 2. Stairways: A stairway in the southeast corner of the building provides access between the first and second floors. A second stairway, located in the northwest corner of Building 110, provides access to the first floor, second floor, and the roof. Stairs are 180-degree return with intermediate landing.
- 3. Flooring: Flooring in most areas is vinyl tile on concrete.
- 4. Walls and ceiling finishes:
  - a. Walls: Interior walls are typically finished with original <sup>3</sup>/<sub>4</sub>" metal lath and plaster on metal studs 16" on center. Other finishes include metal panels and glazed tile in some laboratories.

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 7)

b. Ceilings: Typical ceilings are of acoustical panels mounted in a suspended metal system.

5. Openings:

a. Doorways and doors: Building 110 contains eleven exterior entries:

- The east facade features the building's main entry, a set of elevated storefront double doors of plate glass in metal framing set atop a brick and concrete double-entry stair. The entry is shaded by an aluminum canopy. Secondary entrances include a double doorway with flush metal doors; a single doorway with flush metal door; two single metal doors set into a large panel of aluminum louvers; and a set of narrow double doors of aluminum louvers set into the same panel.
- The south facade features two almost identical entryways. One consists of a single metal door with a glazed panel placed at the top of a brick and concrete staircase accessible from the west. The doorway is covered by an aluminum canopy supported by 3" x 4" metal pipe columns. The second entry is a mirror image of the first in the same facade.
- The north facade contains one entryway of the same type as those in the south facade (accessible from the west), and one set of flush double doors providing access to the loading ramp. The doors are of aluminum louvers set in panels within aluminum frames. The doorway and ramp area is shaded by a wide aluminum canopy supported by 3" x 4" metal pipe columns.
- The west facade of Building 110 has no doors or entries.

b. Windows: Building 110 has no exterior windows, only aluminum vents along the base and parapet of the building, and panels of aluminum louvers covering openings in the south and east facades.

6. Decorative features and trim: None.

7. Hardware: Standard commercial-type brushed-chrome hardware.

8. Mechanical Equipment:

a. Heating, air conditioning, ventilation: Building 110 utilizes a central air conditioning and heating system. The building's air conditioning equipment is located in the mechanical penthouse.

b. Lighting: Typical lighting is recessed fluorescent troffers.

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 8)

c. Plumbing:

- First Floor: The first floor contains a men's toilet with two wall-mounted urinals, one water closet, and three wall-mounted lavatories, and a women's toilet with one water closet and one lavatory. Several of the laboratories are provided with sinks.
- Second floor: The second floor has a men's toilet with two urinals, three water closets, and three lavatories, and a women's toilet with a single water closet and lavatory. In addition, each of the twelve subject rooms at the south end of the building has a sink, as do most of the laboratories, the dining room, and the metabolic kitchen.

d. Elevator: An elevator is located near the center of the building.

D. Site:

1. General setting and orientation: Building 110 is located at the far west side of the USAFSAM campus, turning a blank face towards the parking lots on the west, and its main facade to the east, towards Building 125 and Building 130.
2. Historic landscape design: There is no evidence for a historic landscaping plan, although Texas live oak trees and some shrubbery are present near the building's wall on the west facade and at some entries. Building 110 is primarily surrounded by paved surface parking lots.

PART III. SOURCES OF INFORMATION

- A. Original architectural drawings: Original architectural drawings are held by the BDA, 8030 Challenger Drive, Brooks City-Base, Texas.
- B. Early views: Few detailed early views exist, although aerial views of the USAFSAM campus from the early 1970s are on file in the Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.
- C. Interviews: Interview with Dr. George Schafer, Lieutenant General, USAF Retired, Oral History Interview by HHM Inc., November 22, 2002.

D. NOTES

<sup>1</sup> Martha Freeman, "Appendix L: Historic Context: Brooks Air Force Base, An American Flying Field, 1917-1946." in *Brooks Air Force Base – Historic Preservation Plan* by D.E. Peter, M.B. Cliff, J. Freeman and K.L. Kane. Geo-Marine, Inc., Plano, Texas, L-3.

<sup>2</sup> Brooks Air Force Base, *The First Seventy-Five Years*, (n.p., 1992).

<sup>3</sup> Brooks Air Force Base, *Commemorative Program, Pride in the Past, Faith in the Future – Brooks Air Force Base, 1917-1992*, (San Antonio Press, 1992), p. 9.

<sup>4</sup> Freeman, “Historic Context,” L-23.

<sup>5</sup> *Commemorative Program*, 1992.

<sup>6</sup> Department of the Air Force, HQ, Washington DC to Chief of Engineers, Department of the Army, (June 5, 1952), Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

<sup>7</sup> Department of the Air Force HQ to Chief of Engineers, Department of the Army, Revision of “Advance Planning FY53” Document. Various Minor Changes, (June 12, 1952), Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

<sup>8</sup> HHM Interview with Dr. George Schafer, Lieutenant General, USAF Retired, November 22, 2002.

#### BIBLIOGRAPHY

1. Primary and unpublished sources:

Brooks Air Force Base, *Commemorative Program, Pride in the Past, Faith in the Future, Brooks Air Force Base, 1917-1992*. San Antonio Press, 1992.

Brooks Air Force Base, *The First Seventy-Five Years*. N.p., 1992. Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

“Department of the Air Force HQ, Washington DC to Chief of Engineers, Department of the Army.” June 5, 1952. Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

“Department of the Air Force HQ to Chief of Engineers, Department of the Army, Revision of ‘Advance Planning FY53’ Document. Various Minor Changes.” June 12, 1952. Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

2. Secondary and published sources:

Freeman, Martha. “Appendix L: Historic Context: Brooks Air Force Base, An American Flying Field, 1917-46.” Geo-Marine, Inc., Plano, Texas, 1995.

BROOKS AIR FORCE BASE, BUILDING 110  
(BROOKS AIR FORCE BASE, ENVIRONMENTAL SCIENCE LABORATORY)  
HABS NO. TX-3521-B  
(Page 11)

1966, as amended, and its enabling regulations 36 CFR 800, the transfer of Federal property is an adverse effect that must be mitigated via a Memorandum of Agreement (MOA) between the lead federal agency, the State Historic Preservation Officer (SHPO) and other consulting parties invited to participate in the consultation.

In consultation with the Texas SHPO, the Air Force determined that seventeen buildings at Brooks City-Base were eligible for inclusion in the National Register of Historic Places. The Air Force developed an MOA in consultation with the Texas SHPO, City of San Antonio and BDA to mitigate the adverse impact that transfer would have on the seventeen historic properties at the former Brooks AFB. The MOA was also signed by two concurring parties, the San Antonio Conservation Society (SACS) and the Brooks Heritage Foundation (BHF). The MOA stipulated multiple measures, including preparation of a Historic American Buildings Survey (HABS) Level II documentation report. The Air Force, through the 311<sup>th</sup> Human Systems Wing, hired Earth Tech, Inc. to oversee the preparation of HABS documentation. Under contract to Earth Tech, HHM Inc. of Austin, Texas, gathered historical and architectural information and prepared a historic context and the HABS forms.

The following individuals contributed to this report:

Julia Cantrell, Environmental Protection Specialist, Air Force Center for Environmental Excellence;

Hamid Kamalpour, Cultural Resources Manager, 311<sup>th</sup> Human Systems Wing;

Juvencio Lopez, Construction Manager, Grubb & Ellis Management Services, Inc.;

Allison Rachleff, Architectural Historian, Earth Tech/TAMS;

David W. Moore, Jr., Project Director, HHM Inc.;

Thomas P. Eisenhour, RA, Project Manager and Photographer, HHM Inc.;

Justin B. Edgington, Historian, HHM Inc.;

Olivia L. Fagerberg, Architectural Historian, HHM Inc.;

Jennifer R. Ross, Architectural Historian, HHM Inc.