

BROOKS AIR FORCE BASE, BUILDING NO. 185
(Brooks Air Force Base, Vivarium Support)
7888 Dave Erwin Drive
San Antonio
Bexar County
Texas

HABS TX-3521-N
HABS TX-3521-N

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 185
(BROOKS AIR FORCE BASE, VIVARIUM SUPPORT)

HABS No. TX-3521-N

Location: 7888 Dave Erwin Drive
San Antonio
Bexar County
Texas

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

~~Universal Transverse Mercator Coordinates: 14.553187, 3246338~~

Google Earth Lat/Long 29.347061, -98.453010

Present Owner: Brooks Development Authority (BDA)

Present Occupant: Air Force Research Laboratory (AFRL)

Present Use: AFRL Animal Clinic

Significance: Building 185 (Vivarium Support Facility) was a critical component of space and military research at the U.S. Air Force School of Aerospace Medicine (USAFSAM) complex at Brooks Air Force Base (AFB). As a support facility housing test animals, Building 185 supported animal experiments in centrifuge testing, pressure, acceleration, and temperature tests, and radiation exposure. The building included holding facilities, testing rooms, and autopsy rooms all of which were used in support of USAFSAM's groundbreaking work in space research, as well as in clinical and military applications. The building currently maintains monkeys, pigs and rodents for experimental purposes.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date(s) of erection: 1963
2. Architect: Smith, Hinchman, Grylls & Associates, Inc.
3. Original and subsequent owners: Air Force
4. Builder, contractor, suppliers: Unknown
5. Original plans and construction: Original plans are held by BDA, 8030 Challenger Drive, Brooks City-Base, Texas.

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6. Alterations and additions: Building 185 has suffered few or no alterations since its construction in 1963. It is still used for the original purpose, and thus has required minimal changes.

B. Historical Context:

Building 185 was one of six buildings erected during the second phase of construction (1961-64) at USAFSAM, 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 the National Aeronautic and Space Administration. 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.¹

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 16th Airship Company and the 4th and 5th 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 1922.²

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

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school graduated numerous important aviators including Charles Lindbergh, Frank M. Hawks, Nathan 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.³

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.⁴

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.⁵

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

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Force required a new master plan accommodating the new "Aeromedical Center." Early in the planning 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."⁶ 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.⁷

As early as 1952, the Air Force had foreseen the need to divide construction of the new USAFSAM facilities into at least two phases. An "Analysis of General Master Plan, Brooks Air Force Base, Texas" notes that once the first segment of building was complete, the aeromedical program activities would be able to continue without disruption while additional facilities are added. Older structures, including World War I and II temporary buildings, were used to augment the first five buildings while waiting for completion of the complex. In 1956, Colonel Frese, Commander of the Air University at Maxwell AFB, Alabama, suggested that the USAFSAM complex might ultimately be augmented by 50 percent more buildings than were stipulated for the first building phase. In April 1958, a memo produced by the Ad Hoc Committee on Aeromedical Expansion (presumably made up of scientists and department heads from the Randolph AFB School of Aviation Medicine) noted facilities already in the planning stages for the second phase of construction. These included a clinical and experimental research dental building, a library, biometrics and records repository building, a vivarium, and a primate testing, holding and breeding facility. Committee members were urged to identify any special facilities they would need for their work. By June 1959 the Air Force completed a document titled "Construction Project Justification Data," outlining proposed requirements and purposes for a number of new buildings. Of seven proposed structures, six were built.

Design work on the second phase of building began soon after the first five buildings were occupied by USAFSAM during the summer of 1959. The six buildings (including Building 185) constructed during the second construction phase, from 1961-64, were designed by the firm of Smith, Hinchman & Grylls of Detroit, Michigan. No records of contracts between the firm and the Air Force have been located, and indeed, Smith, Hinchman & Grylls may have been yet another subcontractor to Ellerbe & Company, which was still involved with base-wide planning for Brooks AFB. Smith, Hinchman & Grylls (today known as SHG Incorporated) was founded in 1853 by architect Sheldon Smith, and is Michigan's oldest architectural firm. Prior to their involvement in the USAFSAM project, the firm had designed numerous prominent buildings in downtown Detroit, including the Penobscot Building (1928), the forty-floor Guardian Building (1929), and the J.L. Hudson Company Department Store (1948). In 1952, the firm built three major buildings for the University of Michigan campus at Ann Arbor: Mason Hall, Haven Hall, and Angell Hall Auditorium. Smith, Hinchman & Grylls' work at Brooks AFB may have been a major point of departure for the firm, which later became well-known for laboratory designs, including the Los Alamos National Laboratories in New Mexico, the Naval Air Warfare Center Advanced Systems Integration Laboratory in Maryland, and numerous university laboratory facilities.

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The buildings designed by Smith, Hinchman & Grylls for the second phase of construction at USAFSAM include: Building 140 (Biosystems Research Laboratory); Building 150 (Professional Building); Building 155 (Research Library); Building 170 (Bioastronautics and Biodynamics Laboratory); Building 175 (Bionucleonics Laboratory); and Building 185 (Vivarium Support). All the buildings conform with the precedent set by C.H. Page & Son, using steel construction with brick veneer and extruded aluminum fenestration in the International Style.

Building 185

Erected in 1963, Building 185 was crucial to the success of research efforts at USAFSAM. In 1959, when the school moved to Brooks, Building 125 (Research Institute) served as the temporary home for small animal species such as rabbits, mice, rats, hamsters, and guinea pigs. A larger facility capable of housing larger species such as monkeys and dogs was deemed vital as stated in a 1958 Air Force Construction Plan:

The experimental animal is one of the most important basic instruments in biological research. In man's search for the answers to problems in aviation medicine, space medicine, and the human factors of flight, the animals used must provide the basic data...Before tests are tried on humans, they are first tried on animals and the findings extrapolated to humans. To provide the best experimental animals possible, an adequate Vivarium support facility is essential.⁸

To meet the necessary requirements for animal research, Building 185 was designed to include four components: a primate holding and breeding colony with a capacity of 800 small primates; a dog colony with a capacity of 200; a large animal unit capable of holding up to ten animals such as burros, swine or sheep; and a necropsy facility for conducting animal autopsies. Each unit was designed to include an isolation colony, for specific animals to be isolated during experiments, as well as testing facilities, which allowed researchers to examine the physical and mental performance of animals following unusual stresses.

Building 185 supported animal experiments in centrifuge testing, pressure, acceleration, and temperature tests, and radiation exposure. The results from these experiments allowed researchers to supply the Air Force and NASA with basic information regarding life support systems, space suits, and other crucial systems related to space and aircrew technology. Since its construction, Building 185 has maintained groups of animals used in experiments for USAFSAM scientists. Current research utilizes monkeys, swine and rodents.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: Building 185 displays characteristics of the International Style in common with the other contributing buildings in the USAFSAM campus: a flat roof,

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broad expanses of brick, facades treated as flat surfaces accented by tall, narrow windows, and lack of ornamentation.

2. Condition of fabric: The building is in good condition.

B. Description of Exterior:

1. Overall dimensions: Building 185 is irregular in plan, consisting of a rectangular main body measuring 92'-0" x 207'-8", and a west addition measuring 21'-0" x 35'-0". Overall dimensions are 207'-8" x 113'-0". The building is one story with a partial basement and a mechanical penthouse.
2. Foundation: The foundation is concrete pier and beam with a continuous perimeter beam. In common with other Smith, Hynchman, & Grylls-designed buildings at Brooks City-Base, the perimeter foundation features a distinctive recessed design, giving the building a floating appearance.
3. Walls: Exterior walls are brick veneer with 4" (nominal) structural clay tile backing, and are 10-1/2" thick.
4. Structural system, framing: Building 185 has steel framing with wide-flange columns and beams, and steel bar joists.
5. Porches, stoops, balconies, bulkheads: Concrete loading docks and stairs on south and north facades.
6. Chimneys: None.
7. Openings:
 - a. Doorways and doors: The main entry, on the north facade of the west addition, consists of a single aluminum-and-glass door. Secondary entrances on the north and south facades have flush hollow metal doors. There are no entries on the east facade.
 - b. Windows and shutters: There are grouped fixed-glass windows on the west facade and on the north and south facades of the west addition. The foundation-to-roof windows feature mill-finish aluminum framing with porcelain enamel steel spandrel panels above and below each fixed glass panel.
8. Roof:
 - a. Shape, covering: Building 185 has a flat roof with built-up-roofing.
 - b. Cornice, eaves: None.

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- c. Dormers, cupolas, towers: There is a steel-frame mechanical penthouse with a flat roof and insulated steel panel siding.

C. Description of Interior:

1. Floor plans:

- a. Basement: Building 185 has a partial basement containing a mechanical room and generator room, measuring roughly 23'-7" x 37'-1". The area is accessed by an exterior stair on the west facade.
- b. First floor: A central corridor extends the length of the building. Animal holding areas line the corridor. Two short corridors, which extend west from the main corridor, lead to examining rooms, treatment rooms, and support spaces. Interior partitions are typically 3-3/4" clay tile.

2. Stairways: A concrete exterior stair to the basement is located in an areaway on the west side of the building.

3. Flooring: Typical flooring in Building 185 is vinyl tile in corridors and laboratories and cement in animal rooms.

4. Walls and ceiling finishes: Corridor walls are finished with wainscots of green glazed structural units to a height of 7'-5/8" with plaster above and terrazzo bases. Other walls have a plaster finish. Other materials for bases include glazed structural units and vinyl. Ceilings are suspended metal channels with plaster finish.

5. Openings:

- a. Doorways and doors: Typical interior doors are single, hinged, hollow metal flush doors. Many have small vision panels or louvered panels.

- b. Windows: There are no interior windows.

6. Decorative features and trim: None.

7. Hardware: Building hardware is standard commercial-grade hardware with a brushed-chrome finish.

8. Mechanical Equipment:

- a. Heating, air conditioning, ventilation: Building 185 is equipped with central air conditioning and heating.

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- b. Lighting: Typical lighting consists of fluorescent fixtures recessed in the plaster ceiling.
- c. Plumbing: There are two toilets in Building 185, on the west side of the first floor. The men's toilet has two water closets with flush valves, one urinal, two lavatories, and two single shower stalls. The women's toilet has one water closet with flush valve and a single lavatory. Lavatories are also located in all caged monkey rooms.

D. Site:

- 1. General setting and orientation: Building 185 is on the eastern edge of the USAFSAM campus area. Golf course on east, service drive and parking area on south, lawn on north, lawn and Dave Erwin Drive on west.
- 2. Historic landscape design: Original drawings and historic photos show no evidence of landscape design other than sidewalks linking the building to parking areas and Building 186. Today there are three mature live oaks just north of the building.

PART III. SOURCES OF INFORMATION

- A. Original architectural drawings: Original drawings by Smith, Hinchman & Grylls Associates, Inc, dated January 1963, are held by the BDA, 8030 Challenger Drive, Brooks City-Base, Texas.
- B. Early views: Early aerial views of Building 185 are held by the Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.
- C. Interviews: N/A

D. NOTES

¹ 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.

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

³ 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.

⁴ Freeman, "Historic Context," L-23.

⁵ *Commemorative Program*, 1992.

⁶ Department of the Air Force, HQ, Washington DC to Chief of Engineers, Department

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of the Army, (June 5, 1952), Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

⁷ 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.

⁸ Department of the Air Force, "Department of the Air Force, Construction Project Justification Data, April 29, 1958, Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base, p. 9.

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"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.

Department of the Air Force, "Department of the Air Force, Construction Project Justification Data," April 29, 1958.

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.

E. Likely sources not yet investigated: The archives at the Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base contain a wealth of documentation that merits further exploration.

F. Supplemental Materials:

LIST OF ACRONYMS

AFB	Air Force Base
AFRL	Air Force Research Laboratory
AMC	Aerospace Medical Center
AMD	Aerospace Medical Division
AMRL	Aerospace Medical Research Laboratory
ARL	Aeromedical Research Laboratory
BDA	Brooks Development Authority
BHF	Brooks Heritage Foundation
BRAC	Base Realignment and Closure
DOD	Department of Defense
HSD	Human Systems Division
ICBM	Intercontinental Ballistic Missile
MISS	Man in Space Soonest
MOA	Memorandum of Agreement
MOL	Manned Orbiting Laboratory
NASA	National Aeronautics and Space Administration
NHPA	National Historic Preservation Act
NPS	National Park Service
SACS	San Antonio Conservation Society
SAM	School of Aviation (Aerospace) Medicine
SHPO	State Historic Preservation Office
USAFSAM	U.S. Air Force School of Aerospace Medicine
WAC	Womens Air Corps

PART IV. PROJECT INFORMATION

A. Federal Agency:

Air Force
311th Human Systems Wing
Brooks City-Base
San Antonio, Texas.

- B. Project Causing Adverse Effect: The Brooks City-Base project is a cooperative partnership between the Air Force and the non-federal community in which the physical assets of the former Brooks AFB have been transferred from the Air Force to BDA, a local municipality under Texas statute. Under Section 106 of the National Historic Preservation Act (NHPA) of 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

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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 311th 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:

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

Jennifer R. Ross, Architectural Historian, HHM Inc.