BROOKS AIR FORCE BASE, BUILDING NO. 130
(Brooks Air Force Base, Research Laboratory Shops)
7735 Chambers Parkway
San Antonio
Bexar County
Texas

HABS TX-3521-D
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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 130
(BROOKS AIR FORCE BASE, RESEARCH LABORATORY SHOPS)

HABS No. TX-3521-D

Location: 7735 Chambers Parkway
San Antonio
Bexar County
Texas

~~USGS Southton, Texas Quadrangle (7.5')~~
~~Universal Transverse Mercator Coordinates: 14.552922.3246572~~
Google Earth Lat/Long 29.348669 -98.454598

Present Owner: Brooks Development Authority (BDA)

Present Occupant: Air Force Research Laboratory (AFRL) Technical Support

Present Use: Offices, photographic and media facilities

Significance: Building 130 (Research Laboratory Shops) was one of the first buildings constructed at the U.S. Air Force School of Aerospace Medicine's (USAFSAM) campus at Brooks Air Force Base (AFB). Machinists and engineers at Building 130 invented and fabricated devices for a wide variety of applications, including the biopack suborbital flight tests of the National Aeronautic and Space Administration's Project Mercury and monitoring devices for space cabin environments. Building 130 was the site of vital, innovative work supporting space exploration. The building now houses the Technical Support unit of AFRL.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date(s) of erection: 1959

2. Architect: Charles H. Page, Jr. of Texas Architect-Engineers Associates

3. Original and subsequent owners: Air Force

4. Builder, contractor, suppliers: Unknown

5. Original plans and construction: Original plans are on file with BDA, 8030 Challenger Drive, Brooks City-Base, Texas.

6. Alterations and additions: Building 130 has undergone numerous minor changes since its construction in 1959, but has suffered no major additions or alterations. Interior spaces have been modified by the replacement of some historical finishes, the installation of new technical equipment, and the rearrangement of some spaces. Building 130 retains its historic integrity.

B. Historical Context:

Building 130 was among the first buildings erected in 1959 as part of USAFSAM's new home 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.[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 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 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]

By 1954, however, Ellerbe & Company was unwilling or unable to finish work on the design of USAFSAM. Rising construction costs and the Korean War also delayed work on the project. To complete the building designs, Ellerbe & Company selected Charles H. Page, Jr. of C.H. Page & Son as a subcontractor. Graduating from the University of Texas School of Architecture in 1932, Charles H. Page, Jr. joined his father, C.H. Page, a prominent Austin architect, in 1936. The new firm specialized in the design of hospitals, schools, and military installations, including the Driscoll Children's Hospital in Corpus Christi, Texas, Bergstrom AFB in Austin, Texas, and flight laboratories at the White Sands Proving Grounds in New Mexico.

Although C.H. Page and Charles H. Page, Jr. were the firm's principals until C.H. Page's death in 1957, the firm often collaborated with other architecture and engineering firms, using some variant of the name "Texas Architect-Engineer Associates," as they did on the plans for the first five buildings constructed for USAFSAM, including Building 100. Architects at C.H. Page & Son were given the task of preparing a contour and building model of the entire site, later identified as 'The Hill,' in order to study at least three possible site plans for the school. Ellerbe's schematic plot plans and site studies were to be used as the basis for Page's work.

The Texas Architects-Engineer Associates completed plans for the first five buildings on the USAFSAM campus: Building 100 (Flight Medicine Laboratory); Building 125 (Research Institute); Building 130 (Research Laboratory Shops); Building 160 (Altitude Laboratory); and Building 180 (Academic Building). Plans for these structures are dated between 1956-58, and all are signed by Charles H. Page, Jr.

Building 130

The Air Force assumed ownership of Building 130 on May 12, 1959. The building was designed as a fully equipped production center for highly specialized equipment needed for USAFSAM scientific projects, as well as a photographic department and photography/television studio. It contained shops for carpentry, plastics and glass, electronics, welding, and plating, as well as surfacing and optical work. Building 130 also served as an instrument storage and repair space until a new equipment repair shop, Building 167, was built in 1969.

Machinists and engineers at Building 130 invented and produced devices for a wide variety of applications, working without blueprints and using their own ingenuity to solve complex problems put to them by scientists. During the height of the space era during the mid to late-1960s, up to twenty skilled people worked in the fabrication shops. They designed and built biomedical life support equipment needed for space projects including NASA's Project Mercury and the Air Force's MOL. Some of the most widely-acclaimed products of Building 130 were the biopacks created for small animals launched into space to test physiological reactions to suborbital flight in Project Mercury. Biopacks protected the animals during their flights aboard ballistic rockets, acting as their pressure suits, test chambers, and restraints. The biopacks consisted of fiberglass couches, monitoring devices, and oxygen systems mounted within plexiglass and steel cylinders.[8] In addition to mice, biopacks were made for two chimpanzees and two rhesus monkeys.

Building 130 is now occupied by the AFRL Technical Support, which continues to serve USAFSAM. The Media Services Department continues to utilize the photographic facilities in Building 130, though many of the other fabrication shops have been dismantled and converted to offices.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: Building 130 was designed as a technical building supporting scientific research and teaching, and reflects this support role in its utilitarian appearance. Nonetheless, the flat-roofed, brick-faced building blends with the International Style of the other buildings of the USAFSAM campus, featuring nicely detailed stone copings, planter boxes, and steps at the main entries on the south facade.

2. Condition of fabric: Building 130 stands in good condition.

B. Description of Exterior:

1. Overall dimensions: Building 130 has a rectangular plan, and is one story with a partial second floor and basement. The building measures 270'-0" x 92'-0" x 28'-5" (finished basement floor to top of parapet). The north facade is an unrelieved flat plane, while the south facade consists of three bays, with the central bay recessed 3'-10" from face of the east and west bays.

2. Foundation: Concrete pier and beam.

3. Walls: Exterior walls are structural clay tile with brick veneer, and the central bay of the south facade is faced with limestone panels. The roof parapet features limestone coping. The building's penthouse is made of insulated metal panels on steel framing.

4. Structural system, framing:

a. Basement floor: The basement is concrete slab on grade.

b. First floor, second floor, and roof: All other floors are of reinforced concrete slab with one-way concrete joists and steel beams encased in concrete. Framing consists of steel columns concealed within masonry walls.

5. Porches, stoops, balconies, bulkheads:

a. North facade: The north entry has a granite-paved terrace and brick railing with limestone cap. Projecting horizontal concrete fins shelter recessed secondary entrances. An exterior stair to the basement is located on the north facade.

b. East facade: A concrete loading dock is on the east facade.

c. South facade: Two identical, but reversed, main entrances to the building are on the south facade. Each entry is recessed 3'-10" from the facade of the central bay and is 7'-0" wide. Entries are accented with limestone-faced planter boxes and a granite porch.

d. West facade: The west entry has granite-paved steps and landing, and a brick railing with limestone cap. Projecting horizontal concrete fins shelter the secondary entrances.

6. Chimneys: None.

7. Openings:

a. Doorways and doors:

- North facade: The main entry on the north facade consists of paired aluminum and glass storefront doors with aluminum frames. A secondary entrance at the basement level has a pair of hollow metal doors with a three-light vision panel.

- East facade: The east facade has two secondary entrances comprised of hollow metal doors with three-light vision panels, as well as a metal roll-up door.

- South facade: The two main entrances on the south facade are mirror images of one another, consisting of paired aluminum and glass doors with aluminum frames.

- West facade: The west facade has a single pair of hollow metal doors with three-light vision panels.

b. Windows and shutters: The only exterior windows in Building 130 are three sets of projected windows on the first floor level of the north facade, configured in a 3-6-3

pattern. Each window has one hopper and one operable awning panel. Windows are provided with an exposed concrete fin above, and a stone sill below.

c. Other openings: There are six louvered vents on the basement levels of the north facade.

8. Roof:

a. Shape, covering: Flat with built-up roofing on both main roof and penthouse.

b. Cornice, eaves: None.

c. Dormers, cupolas, towers: Building 130 has an L-plan, steel-frame penthouse with insulated metal siding.

C. Description of Interior:

1. Floor plans:

a. Basement: The basement of Building 130 consists of a rectangular mechanical room measuring 59'-10" x 29'-11", located near the center of the north side of the building.

b. First floor: The first floor is partitioned into three distinct blocks, served by two double-loaded corridors extending north from the primary entrances and connecting to two east-west corridors. The central block contains the film and photography studio, as well as numerous service and support areas. The eastern portion of Building 130 was designed to contain carpentry, welding, and instrument shops, and is separated from the other areas by a pair of double doors. The western area is the photographic section, and also includes offices and storage space.

c. Second floor: The partial second floor, which is housed within the penthouse, has an L-shaped plan. The east portion contains the upper catwalk area of the historic television and photography studio, while the west side contains an opening for a stair, a north-south corridor, and seven small rooms originally intended for film editing, audio recording, projection, and other studio support functions.

2. Stairways: A single-flight, enclosed stair connects the basement, first floor, and second floor.

3. Flooring: Historically, vinyl asbestos tile was installed throughout most of the building, although standard commercial-grade carpet now covers original flooring in corridors and spaces now used as offices. Other floor finishes include:
   - quarry tile and ceramic tile, which are used in wet areas such as toilets and darkrooms;
   - cork, which is used in studio rooms;

- exposed concrete, used in the shops and basement.

Today standard commercial carpet covers floors throughout the building.

4. Walls and ceiling finishes: Plaster walls with wood crown moldings are the typical wall finish in Building 130. Other finishes include:
   - glazed structural units, used in corridors, toilets, laboratories, and some studio areas;
   - unglazed facing tile, used in shop areas;
   - acoustical tile, which is used in the studio.

   Some studio support areas of the second floor historically had partition walls of perforated asbestos cement board, and the studio had fabric-covered walls. Today these materials have been replaced with gypsum board.

5. Openings:

   a. Doorways and doors: The typical interior door is a single, solid-core flush wood door, measuring 7'-0" x 3'-0" x 1-¾".

   b. Windows: The only interior windows in Building 130 are five vision panels placed in the western partition wall of the studio space. The five vision panels of varying sizes are used on the second floor to provide visual communication between the studio and the audio, projection, recording and control rooms.

6. Decorative features and trim: In keeping with the International Style design of Building 130, there are no decorative features.

7. Hardware: Hardware is standard manufactured commercial-grade door hardware with brushed chrome finish.

8. Mechanical Equipment:

   a. Heating, air conditioning, ventilation: Building 130 has central heating and air conditioning, with rooftop metal vents.

   b. Lighting: Typical lighting is recessed fluorescent troffers.

   c. Plumbing: Building 130 is equipped with two toilets on the south side of the first floor. The men's toilet has two water closets, three wall-mounted urinals, and five lavatories. The women's toilet contains two water closets, and two lavatories. Some of the shop and photographic areas are provided with sinks.

D. Site:

1. General setting and orientation: Building 130 is part of the Phase I campus construction that was completed in 1959, and is unusual amongst the early USAFSAM buildings because of its southward orientation, facing away from the major campus buildings near Kennedy Circle. Building 130 is bounded on the northwest by a lawn with mature oaks, on the northeast by a service drive, on the east by a loading area, and on the south and west by large parking lots. Building 125 is directly north and Building 110 is northwest of Building 130.

2. Historic landscape design: Original drawings and early views of the building show no indication of planned landscaping. The only major alterations to the setting of Building 130 since it was built are the addition of Building 110 to the northwest and the construction of a large parking area to the south of the building.

PART III. SOURCES OF INFORMATION

A. Original architectural drawings: Original drawings by Texas Architect-Engineer Associates are held by BDA, 8030 Challenger Drive, Brooks City-Base, Texas.

B. Early views: Some early views of the construction of Building 130 and surrounding buildings are available in the archives of the Edward H. White, II Museum of Aerospace Medicine at Hangar 9, Brooks City-Base, Texas, and the Austin History Center, Austin Texas.

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 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] Purificato, R. "Brooks worker's space devices help equip NASA for moon trip." *Discovery*. (July 2, 1999).

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.

Purificato, R. "Brooks worker's space devices help equip NASA for moon trip." *Discovery*. July 2, 1999.

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