

PIASECKI H-21B WORKHORSE HELICOPTER
("Flying Banana")
Pate Museum of Transportation, 18501 Highway 377 S
Cresson
Hood County
Texas

HAER TX-122
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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HAER No. TX-122

Location: Pate Museum of Transportation, 18501 Highway 377 S,
Cresson, Hood County, Texas

Date of Construction: Ordered 1953. Delivered December 20, 1955.

Military Serial Number: 53-4324

Construction Number: B.74

Principle Measurements:

Length overall:	86'-4"
Length of fuselage:	52'-6"
Height:	15'-4"
Rotor diameter:	44'-0"
Disc area:	3,041 square feet
Empty weight:	8,950 lb
Max. loaded weight:	15,200 lb
Maximum speed:	125 mph
Cruise speed:	101 mph
Range:	400 miles
Ceiling:	7,750'
Crew:	2
Capacity:	20 troops or 12 stretchers plus 2 attendants

Manufacturer: Piasecki Helicopter Corporation, Morton, Pennsylvania

Original Owner and Use: United States Air Force; personnel transport aircraft

Present Owner and Use: National Museum of the U.S. Air Force; lent as museum display

Significance: This Piasecki H-21B Workhorse helicopter, nicknamed "Shaky Magoo," flew with the U.S. Air Force 1370th Photo-Mapping Wing, based at Turner Air Force Base, Albany, Georgia. It represents a class of tandem-rotor helicopters developed by the Piasecki Helicopter Corporation for U.S. Air Force Arctic supply missions but deployed extensively elsewhere as personnel-transport and rescue craft in the late 1950s and early 1960s. The similar H-21C Shawnee was the first helicopter to be deployed in significant numbers by the U.S. Army in Vietnam.

Historian: Michael R. Harrison, 2012

Description: The Piasecki H-21B Workhorse is a tandem-rotor helicopter with a distinctive upward bend midway along the length of its fuselage. It has an aluminum frame and skin and plexiglass nose and fuselage windows. It is equipped with one sliding door on the right side just behind the cockpit and another on the left side at mid body. The helicopter rests on three fixed landing gear with wheels and has twin vertical rear stabilizing fins. The aircraft's two three-bladed, fully-articulated horizontal rotors are positioned at either end of the fuselage. It has a rear-mounted nine-cylinder Curtis-Wright R-1820-103 Cyclone supercharged air-cooled radial engine producing 1,425 horsepower (hp). Designed for cargo, rescue, or personnel transport, the Workhorse could be fitted with wheels, skis, or floats. This example was fitted for carriage of personnel and light equipment.

History: The Piasecki Helicopter Corporation, founded by Frank Piasecki and partners as P-V Engineering in the early 1940s, delivered the first tandem-rotor helicopters, the HRP-1 Rescuers, to the U.S. Navy between 1947 and 1949 and produced a few improved HRP-2s in 1949. The U.S. Air Force (USAF) contracted the company in 1949 to develop a transport helicopter for Arctic use based on the HRP-2 design. The first of eighteen YH-21 Workhorse test helicopters flew in April 1952, and the first production H-21A Workhorse, a significantly improved aircraft with adaptations for working in low temperatures, entered service in October 1953.

The HRP-1 Rescuer had been designed with an upward bend midway along the length of the fuselage to allow the aft rotor to clear the forward rotor. This bend was retained in the design of the HRP-2 and the H-21, and all three aircraft were commonly known as "flying bananas." (It did not hurt that the three HRP-1s the U.S. Coast Guard flew out of the air station at Elizabeth City, North Carolina, between 1949 and 1951, were painted yellow.)

The Workhorse was built for the USAF in two versions. The initial H-21A used a Curtis-Wright R-1820-103 engine with a rating of 1,150 hp. It could carry fourteen troops or twelve stretchers. The H-21B had the same engine but with a rating of 1,425 hp for greater lifting capacity. It could carry twenty troops. The H-21B also had an autopilot, some protective armor, and provision for auxiliary external fuel tanks. The U.S. Army ordered its own variant, the H-21C Shawnee, from Piasecki in 1952. Altogether, the USAF took delivery of thirty-two H-21As and 163 H-21Bs, while the army ordered 334 H-21Cs. Other examples were built for foreign delivery, and the French used the type extensively in operations during the Algerian Revolution in 1954-62.

The USAF used its Workhorse helicopters to service its Distant Early Warning radar installations, located in Arctic locations spreading from the Aleutian Islands to Iceland. It also used them as general-purpose rescue and personnel-transport aircraft. The Shawnees were the first helicopters used in significant numbers by the U.S. Army in Vietnam, arriving in late 1961 and early 1962, although they were gradually withdrawn from use in the warzone in late 1963 and 1964 as more reliable and powerful Bell UH-1 Iroquois ("Hueys") entered service.

Piasecki H-21B serial number 53-4324 was delivered to the USAF on December 20, 1955. It was assigned to the following commands during its service life:

December 1955	To Middletown Air Materiel Area, Olmstead AFB, Pennsylvania
April 1956	To 6615th Air Transport (Medium) Squadron (Northeast Air Command [NEAC]), Goose AB, Labrador
September 1956	To 22nd Helicopter Squadron (NEAC), Goose AB
February 1960	To San Bernardino Air Materiel Command, Norton AFB, California
July 1960	To 2848th Air Base Wing (Air Materiel Command), Norton AFB
May 1961	To 1376th Consolidated Maintenance Squadron (Military Air Transport Command), Turner AFB, Georgia
June 1963	To 4500th Air Base Wing (Tactical Air Command), Langley AFB, Virginia
December 1966	To Air Proving Ground Center (Air Force Systems Command [AFSC]), Eglin AFB, Florida
November 1967	To Air Development Test Center (AFSC), Eglin AFB
October 1969	Dropped from inventory by transfer to National Museum of the U.S. Air Force

The helicopter was nicknamed "Shaky Magoo" during the period it flew with the 1376th Consolidated Maintenance Squadron. This squadron was part of the 1370th Photo-Mapping Wing of the Air Photographic and Charting Service, based at Turner Air Force Base, Albany, Georgia. In 1962, the helicopter was deployed for a time to Atkinson Field in British Guiana.

The USAF declared the helicopter surplus in 1969 and lent it to the Pate Museum of Transportation at Cresson, Texas, sometime later. The private museum, founded in 1969 by Texas Refinery Company owner A. M. Pate Jr. and his brother Sebert, was primarily a vehicle for displaying Pate's automobile collection, but it also exhibited borrowed aircraft and a navy minesweeper. Pate's family continued to run the museum after his death in 1988, but they finally closed it in December 2009. In 2010, the automobile collection was sold at auction, and the aircraft were re-lent by the National Museum of the U.S. Air Force to other museums. The H-21B was removed from the Pate Museum in 2011 and will reportedly be restored to 1370th Photo-Mapping Wing livery and lent to the Air and Space Section of the Musée Royal de l'Armée et d'Histoire Militaire in Brussels, Belgium.

Piasecki Helicopter Corporation became Vertol Aircraft Corporation in March 1956 and Boeing Vertol in 1960. The U.S. Air Force and army reclassified these aircraft as CH-21A, CH-21B, and CH-21C in 1962. Because of these name changes, the H-21s are often referred to as Vertol or Boeing Vertol CH-21B Workhorses and CH-21C Shawnees. Examples of H-21 helicopters are in museum collections across the country.

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Related documentation: For the histories of two other vehicles formerly displayed at the Pate Museum of Transportation, see

Minesweeping Boat MSB 5, HAER No. TX-120

Fairchild C-119G Flying Boxcar Airplane, HAER No. TX-121

Project Information: This project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The Heritage Documentation Programs of the National Park Service, U.S. Department of the Interior, administers the HAER program. Documentation of the Piasecki H-21B Workhorse was cosponsored by the Texas Historical Commission in coordination with the Pate Museum of Transportation. Todd Croteau, HAER Project Leader, coordinated the project and prepared the large-format photographs. Historian Michael R. Harrison wrote the historical report.