

Helicopter heroes

It was 50 years ago that a prototype helicopter first flew and a legend was born—the CH-47

By Mike Lombardi

Currently serving on the front lines of the global fight against terrorism, the CH-47 Chinook is the epitome of the innovative tandem-rotor helicopter designs produced through the genius of helicopter pioneer Frank Piasecki, founder of the company that would later develop into the Boeing operations near Philadelphia.

The CH-47, having been continuously modernized, has provided unmatched capability for U.S. and allied troops since its introduction 50 years ago this month.

First flown on Sept. 21, 1961, the YCH-1B prototype for what would later be known as the CH-47 was originally a design of the Vertol Helicopter Co. of Philadelphia, a company that traced its history to 1943 when Piasecki established the P-V Engineering Forum after flying the United States' second successful helicopter—the PV-2. In 1946, the company became Piasecki Helicopter Corp.

The Chinook's roots actually go back to 1945 when the U.S. Navy ordered a large rescue and transport helicopter and Piasecki and his team developed a tandem-rotor helicopter capable of carrying 10 passengers.

Known as the HRP, it was the largest helicopter in the world at the time and represented the first successful use of the tandem-rotor design. Nicknamed the "Flying Banana," the HRP originated the distinct banana shape of tandem-rotor helicopters that served as a foundation for the design of the CH-47.

The advantage of this unique design allows for low load-per-rotor area, eliminates the need for a tail rotor, increases lift and stability, and provides a large range for center of gravity.

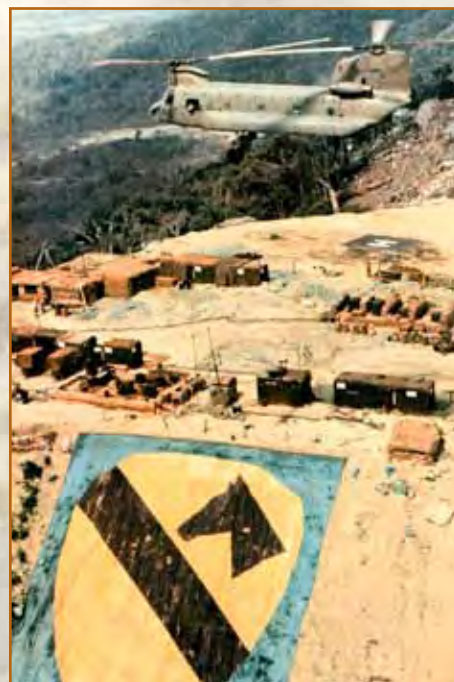
The HRP was followed by the U.S. Navy HUP/UH-25, the first helicopter to incorporate overlapping tandem rotors, and the U.S. Air Force CH-21, a long-range helicopter transport designed for use in the Arctic.

Piasecki stepped down in 1955 as chairman of his company, which then became Vertol Aircraft Corp. The engineering team established by Piasecki continued to the next generation of tandem-rotor helicopters and achieved success with the introduction of prototypes that would lead to the CH-46 Sea Knight and CH-47 Chinook.

In 1960, The Boeing Company, looking to expand into vertical flight, purchased Vertol and provided financial resources and expertise to support production of the Sea Knight and Chinook.

The U.S. Army took delivery of its first Chinook in August 1962, and within three years CH-47s flew into combat accompanying the U.S. 1st Cavalry Division when it deployed to Vietnam in 1965.

In 1978, Boeing introduced the CH-47D, a modernization program that converted 472 earlier model Chinooks into an essentially new CH-47 fleet with upgraded power plants and transmission systems that could handle nearly twice the original lift capacity of the CH-47A.



Just as earlier Chinooks proved themselves in wartime, the D model has played a key role for U.S. and allied troops in the deserts of Iraq and the mountains of Afghanistan. The highly modified MH-47 series is operated by the U.S. Army Special Operations Forces.

When the Chinook first flew in 1961 *Boeing Magazine* wrote: "There is a saying in the aviation industry that you can tell a winner by its appearance. If it looks good, chances are it will be good. If this is true, then the Boeing Vertol HC-1B, now in production for the U.S. Army, has a great future."

Indeed. It's a future that will extend well into the 21st century, with Boeing employees near Philadelphia now building the latest model of the Chinook, the CH-47F (See July 2011 *Frontiers*).

The world's premier large helicopter is the longest production program in Boeing history and one of the longest in aviation history. Its longevity and success are a tribute to the men and women of Boeing Philadelphia and the pioneering spirit of Frank Piasecki. ■

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The hard work and dedication of the Boeing Philadelphia team have created an aircraft that is truly a joy to fly.

— Jeffrey Bender, chief pilot for H-47 Programs, and Mark Schwerke, chief pilot for H-47 Production Flight Test

PHOTOS: (Above) A CH-47 Chinook is shown conducting exercises in Afghanistan. U.S. ARMY **(Insets, from top)** The forerunner of the Chinook, the XHRP-X, the world's first successful tandem-rotor helicopter; the Model 234 Commercial Chinook carries 44 passengers in an interior similar to a Boeing commercial jet; one job that only a Chinook can do is providing transport and resupply to otherwise inaccessible mountaintop firebases. BOEING ARCHIVES