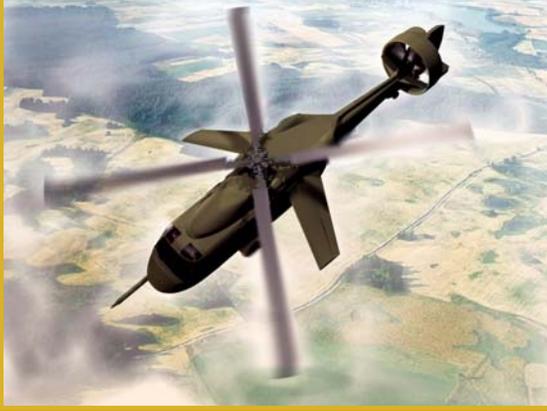


# PIASECKI AIRCRAFT CORPORATION

## VECTORED THRUST DUCTED PROPELLER (VTDP) COMPOUND HELICOPTER TECHNOLOGY



Artist's Concept of H-60/VTDP SpeedHawk™

### About the Technology

Piasecki Aircraft (PiAC) has developed the Vectored Thrust Ducted Propeller (VTDP) Compound Helicopter Technology, which adds a fixed wing and a tail-mounted ducted propeller to a conventional single rotor helicopter. The technology consists of a five-bladed propeller within an 8-foot diameter composite duct with thrust-vectoring sectors and a horizontal elevator. As the aircraft accelerates, the VTDP sectors retract to direct all thrust along the line of flight. Power to the tail thruster increases as the fixed wing unloads the main rotor, providing the compound helicopter with greater speed and range and less vibration than conventional helicopters.

PiAC received a Naval Air Systems Command contract for preliminary design of AH-1W/VTDP and SH-60/VTDP Compound Helicopters and detail design, fabrication, and ground testing of the full-scale, flight-worthy VTDP. The VTDP test program was successfully completed in June 2000, and all technical objectives were met or exceeded. The first flight of this aircraft occurred on June 29, 2007, and the flight test program is proceeding in two phases. Phase 1 verifies the aeromechanical and structural suitability of the X-49A within the SH-60F Naval Air Training and Operating Procedures Standardization (NATOPS) limits, thereby supporting Phase 2 Flight Test expansion beyond the NATOPS limits to demonstrate the full performance capability of the VTDP technology.

### Military and Commercial Significance

The VTDP compound helicopter technology offers the military an affordable means of upgrading existing and future helicopter performance while reducing planned recapitalization costs. Lower operating costs are achieved by decreasing fatigue loads and vibration levels, which can extend the life of helicopter parts. The technology enables a rotary wing aircraft to fly at increased speeds with greater maneuverability, resulting in greater survivability. Successful completion of the VTDP Compound Helicopter ATD flight demonstration program enables DoD to expand the mission capability of the existing helicopter fleet as part of its \$40 billion, 25 year recapitalization effort and provide a technology option for future rotorcraft platforms.

### APPLICATIONS

- Navy: MH-60R/S - Candidate for VTDP Compound Helicopter Technology
- Marine Corps: AH-1Z, UH-1Y - Candidate for VTDP Compound Helicopter Technology
- Army: UH-60M, MH-60M, AH-64D - Candidate for VTDP Compound Helicopter Technology

### About the Company

Piasecki Aircraft Corporation is an aerospace research and development engineering and manufacturing company that develops advanced vertical lift aircraft technologies. Founder Frank Piasecki is one of the original inventors of the helicopter and a pioneer in landing vertical take-off and landing crafts. Successful flight demonstration of the technology developed under this SBIR program offers the opportunity to develop and produce retrofit programs for conversion of existing conventional single rotor helicopters to a compound configuration for significant improvements in performance, survivability, and life cycle cost.