Boeing Developing Low Maintenance Rotor Hub for CH-47 Chinook

The Boeing Company has signed a contract with the U.S. Army to launch development of a new low maintenance rotor hub that will provide major cost and readiness benefits for the CH-47 Chinook, already the world's most efficient and versatile heavy-lift helicopter.

The current CH-47D rotor hub was designed with significant growth capability but contains 400 parts in the hub system assembly, including nine critical bearings that require lubrication. These bearings contain drain points that allow lubricants to escape, requiring inspection, repair and replacement of seals and other parts while creating additional support and operating costs.

The new technology design, used on other advanced rotorcraft such as the Boeing AH-64D Apache Longbow and the Boeing Sikorsky RAH-66 Comanche armed reconnaissance helicopter, replaces lubricated or "wet" bearings with elastomeric "dry" bearings that require no additional lubrication. The elastomeric rotor hub eliminates at least 10 days of unscheduled maintenance each year for every Chinook fielded with the new system. This saving translates into a significant readiness rate increase.

The new rotor design also will provide a longer fatigue life of 4,500 hours, 75 percent fewer parts and a 70 percent reduction in special maintenance tools. All components can be replaced in the field and will not require depot-level overhaul. The new rotor head will be interchangeable with the existing Chinook hub and will retain the same rotor flight dynamics.

The low maintenance rotor hub program calls for development, testing and installation of the new system over four years. New rotor hubs will be incorporated gradually into the U.S. Army's Chinook fleet, as well as Chinooks operated by the U.S. Special Operations Forces, Army Reserve and U.S. Army National Guard. Estimated operation and support cost savings will exceed $200 million over the next 20 years. The Army also is evaluating inclusion of the low maintenance rotor hub in the CH-47F Improved Cargo Helicopter program, and will be incorporated into the CH-47SD International Chinook.

The low maintenance rotor hub program involves a number of innovative approaches to system development. The United Kingdom is preparing a Memorandum of Understanding that will permit its participation as a partner in the program. The British Royal Air Force operates the second largest fleet of Chinooks. Its participation in this program will provide the same operation and support cost savings per aircraft estimated by the U.S. Army.

The proposal activities also have utilized an innovative contracting technique in support of acquisition reform, called Alpha contracting. Alpha contracting emphasizes a close working relationship between the contractor and government customer to clearly define program requirements and prepare a concurrent, mutually agreed to statement of work and proposal pricing package. From solicitation development, through proposal preparation, to evaluation, negotiation and award, Alpha contracting relies on a team approach to concurrently develop a scope of work, program price and execution plan.

The Boeing Company in Philadelphia manufactures and develops world-class rotorcraft for the U.S. armed forces and military customers around the globe. Its products include the CH-47 Chinook, the fuselage of the AH-64D Apache Longbow, and, with Bell Helicopter Textron, the V-22 Osprey tiltrotor aircraft. Boeing also is developing the RAH-66 Comanche armed reconnaissance helicopter with Sikorsky Aircraft.

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