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A skilled operator forges a steel component with a 700 ton mechanical press at Ulven Forging in Hubbard, Oregon. Depending on the steel forged, metal bar stock is induction heated to temperatures ranging from 1,800 to 2,200 degrees. Presses like this one are used to form parts critical to the service life extension of the Air Force's A-10 Thunderbolt II.



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Defense Supply Center Richmond

Forging provides critical part to extend Thunderbolt's service life

By Amy Clement, DSCR Public Affairs

The Air Force's A-10 Thunderbolt II is a versatile aircraft popular with pilots for its effectiveness. The mission of the airplane is ground attack against armored vehicles and tanks, as well as close air support of ground forces. Nicknamed 'the Warthog,' the aircraft was first put in service by the Air Force in 1972 and is currently being used in support of Operations Iraqi and Enduring Freedom.

Earlier this year, the Air Force identified the aircraft wing fitting of the A-10 as a critical part. This fitting, used to hold the wings on, was in short supply.

"In early March, we got the request that these parts were needed by June," said Ann Poythress, Airframes Division 3 chief, Aviation Supplier Operations, Defense Supply Center Richmond, Va. "We discovered that we didn't have an awarded contract that could support that time frame."

This critical part is a forging, used wherever strong, durable parts are needed.

"Forgings are made when metal is heated red hot and hammered in a giant steam hammer, taller than a two story building," said Daniel Gearing, program manager at Defense Logistics Agency's Acquisition, Technical and Supply Directorate (J-33). "This hammering makes the metal grain flow so it can carry the load without breaking. It's the same as a blacksmith making horseshoes, but on a giant scale, using special alloy steel."

By mid-March, the item had gotten everybody's attention, Poythress said. "Calls were coming from the Hill [Utah Air Force Base] commander to the DSCR commander. Our team was making calls all over the place," Poythress said. There was a nationwide search for the needed steel.

"The wing fitting is a critical part in the wing System Life Extension Program," said Dean Hutchins, DSCR casting and forging program manager in the Aviation Engineering Directorate. "When the A-10 aircraft part is not available, a decrease in the induction rate of the aircraft can occur, or a cessation in production."

"These planes are being flown so hard and so long that they are wearing out," Gearing said. "To keep them going, the Air Force has started overhaul lines at Ogden Air Logistics Center and several other locations."

DSCR plays a critical role in supporting these overhaul lines. "When we can't get parts, the line stops," Gearing said.

In order to manufacture the part, the forge company must first obtain the raw material for the item from the mill. "This unique material is known as maraging steel," Hutchins said. Maraging steels are low carbon iron-nickel alloys used in components where ultra-high strength is required, along with good dimensional stability during heat treatment.

According to Hutchins, mill runs of this type material are only melted by a few plants in the country and the material is relatively expensive and therefore not usually stocked by material suppliers.

"This is why the current delivery time of over 30 weeks is required to obtain this specialty material," he said.

SIFCO Forge Group, the subvendor and the forging facility for the manufacture, ALKEM, was the critical forerunner who helped shorten the lead time. "Through all of our efforts, SIFCO was able to locate the raw material and have it shipped to them within six days," Poythress said. "It was originally a 38-week lead time to receive the raw material."

Once SIFCO received the raw materials, they were also able to accelerate the forgings. In addition to SIFCO finding the materials and expediting their forgings, ALKEM was able to locate forgings that were already made. "This further expedited the process and all ALKEM now had to do was manufacture the part," Poythress said.

ALKEM was able to ship four fittings in mid-June. "We picked them up in the depot and released them on June 14 to be shipped to Ogden Air Logistics Center at Hill," Poythress said.

"At least a year's time has been cut from what we had originally projected," said Poythress. "The items are still critical because we don't have them in hand, but the expedited delivery phased schedule should support the program throughout the rest of its life."

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