Lockheed Martin C-5 RERP Production Begins

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The first Lockheed Martin C-5 Galaxy strategic transport was inducted into the Reliability Enhancement and Re-engining Program (RERP) production line in ceremonies at the Lockheed Martin facility here August 18. The RERP modifications consist of more than 70 improvements and upgrades to the C-5 airframe and aircraft systems, and include the installation of new higher-thrust, more reliable turbofan engines.

"We have been planning this day for more than a decade and it is a day we have been working incredibly hard to get to for the past two years," said Lorraine Martin, Lockheed Martin C5 vice president. "The aircraft is here; our facilities and our team are ready to go. This aircraft will be a critical asset for the warfighter when it rejoins the Air Force operational fleet next year as a C-5M."

The C-5M is the product of a two-phase modernization effort. The first, the ongoing Avionics Modernization Program (AMP), provides the aircraft a state-of-the-art glass cockpit with modern avionics and flight instruments. Nearly half of the C-5 fleet has already undergone the AMP modifications. RERP is the second phase of the C-5 modernization effort.

The first aircraft to enter the RERP production line is a C-5B based at Dover AFB, Del. This aircraft, Air Force serial number 83-1258, was the first C-5B to come off the production line in 1985. Modernization of this first aircraft is expected to take 13 months. At rate production, the conversion time on future C-5s is expected to be reduced to eight months.

The Super Galaxy climbs higher and faster than legacy C-5s while carrying more cargo over longer distances. It also requires less tanker support. The C-5M is projected to have a much higher mission availability rate due to increased reliability.

An Air Force aircrew based at Dover AFB, Del., recently demonstrated this improved capability by flying non-stop and unrefueled from Dover to Incirlik, Turkey, while carrying 90,000 pounds of cargo on 36 standard military cargo pallets. The crew was able to complete the round trip in two days versus the normal three, and they saved 30,000 pounds of fuel by eliminating an en-route stop.

Current Air Force plans call for Lockheed Martin to deliver 52 C-5Ms (modification of 49 C-5Bs, two C-5Cs, and one C-5A) by 2016. Three C-5Ms, the former Super Galaxy test fleet, have been redelivered to the Air Force. Two aircraft are currently based at Dover. The third C-5M is scheduled to come out of programmed depot maintenance at the Warner Robins Air Logistics Center at Robins AFB, Ga., in early September and will then be ferried to Dover where it will enter operation.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 146,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2008 sales of $42.7 billion.

RERP Production Process Background

After the C-5 aircraft is inducted into the RERP assembly line and the fuel tanks are drained, removal of major systems and equipment, including the current GE TF39 turbofan engines will begin. Lockheed Martin has made a significant initial investment in fixtures and ergonomic work platforms for the C-5 mod hangar at its Marietta facility. Additional investment will be made as the program ramps up its production rate.

Work will then begin on the wing and empennage, wing slats, wing trailing edges, the fuel system, and installing the engine pylon attach fittings and the pylons themselves. This work will be followed by modifications to the cargo compartment, the flight station and landing gear. Also, aircraft systems, such as environmental control, will be reworked, while others, such as the auxiliary power units, will be replaced. The last stage of modifications includes removing wiring for the old systems and installing new wiring.

Finally, the GE F138-GE-100 turbofan engines will be installed. These engines, rated at 50,000 pounds of thrust, are the military version of the CF6-80C2 engine that has recorded millions of flight hours in commercial service. This is the same engine as on Air Force One. It is expected that the F138 engines will have a 20-year on-wing service life before overhaul on the C-5M.

When modifications to the aircraft are completed, both Lockheed Martin and the Air Force will perform functional check flights of the C-5M before its scheduled redelivery to the Air Force. The first production C-5M is scheduled for redelivery to Dover AFB in September 2010.

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