

## HC/MC-130J

### Executive Summary

- DOT&E analysis of the IOT&E data was ongoing at the end of FY12. DOT&E expects to issue a Beyond Low-Rate Initial Production (BLRIP) report in 2QFY13 to inform the April 2013 Full-Rate Production decision.
- Preliminary IOT&E results indicate that the HC/MC-130J provides the capability to perform the combat search and rescue (CSAR) and Special Operations Forces (SOF) missions as well as or better than legacy aircraft in many aspects.
- Preliminary IOT&E results indicate that the HC/MC-130J met the required availability and mission capable rates, met the maintenance man-hour per flight hour requirement, and demonstrated a Mean Time Between Corrective Maintenance significantly better than the combat delivery C-130J fleet.
- Preliminary IOT&E results indicate that one aspect of aircraft survivability may be degraded relative to the legacy aircraft for the intended concept of employment.

### System

- The HC/MC-130J is a medium-sized, four-engine turboprop tactical transport aircraft with hose and drogue aerial refueling, airdrop, and command and control capabilities. The core configuration is based on the Marine Corps KC-130J refueling tanker design with modifications including the ability to receive fuel in flight, a nose-mounted electro-optical/infrared sensor, and a combat systems operator flight deck station.
- The HC/MC-130J program delivers capability in increments. Increment 1 modifications include additional countermeasure dispensers, high-altitude ramp and door hydraulics, an additional (fourth) flight deck crew member station, an additional cargo compartment intercom panel, and cargo compartment 60-Hertz electrical outlets.
- The HC-130J will replace legacy HC-130P/N and MC-130P (rescue) aircraft; the MC-130J will replace legacy MC-130E/P aircraft. The Air Force intends to procure 37 HC-130Js and 94 MC-130Js.



### Mission

- Air Combat Command (ACC) uses the HC-130J to support the personnel recovery mission through:
  - Aerial and ground refueling of vertical lift assets used during personnel recovery missions
  - Para-rescue jumper deployment with rescue-related equipment
  - Infiltration/exfiltration and resupply by airdrop or air land operations
- Air Force Special Operations Command (AFSOC) uses the MC-130J to support special operations missions requirements, including:
  - Aerial refueling and forward arming and refueling point operations of SOF rotary and tilt-rotor aircraft
  - Infiltration/exfiltration, resupply, or delivery of SOF personnel and equipment via airdrop or landing on austere, short runways in hostile or denied territory

### Major Contractor

Lockheed Martin Aeronautics Company – Bethesda, Maryland

### Activity

- Lockheed delivered 2 core configuration aircraft and 10 Increment 1 aircraft to the Air Force.
- The 46th Operations Group completed developmental test and evaluation (DT&E) of the core configuration aircraft in September 2011 and of the Increment 1 configuration, which was the production-representative test article for the IOT&E, in February 2012. The Increment 1 DT&E included regression testing of updated Operational Flight Program software on the new Sanders Technology and Advanced Risk Instruction Set Computer (STAR) IX mission computer

- hardware that is replacing STAR VII hardware throughout the C-130J fleet due to diminishing manufacturing sources.
- The Air Force Operational Test and Evaluation Center conducted IOT&E from March 1 through May 30, 2012, in accordance with the DOT&E-approved test plan. At least two full crews each from ACC and AFSOC flew two Increment 1 aircraft based at Cannon AFB, New Mexico. IOT&E included approximately 253 flight hours over 60 test missions, including a simulated deployment and arctic testing at Eielson AFB, Alaska; maritime testing at Hurlburt Field, Florida; and CSAR

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exercises at Nellis AFB, New Mexico. Test scenarios included air land and airdrop delivery of personnel and cargo, aerial refueling as a receiver and as a tanker to helicopters and tilt-rotors, forward arming and refueling point operations, and defensive reactions to simulated threat engagements.

- The IOT&E also included scenarios for defensive engagements with prepositioned and mobile threat simulators to assess aircraft survivability equipment.

## Assessment

- DOT&E analysis of the IOT&E data was ongoing at the end of FY12. DOT&E expects to issue a BLRIP report in 2QFY13 to inform the April 2013 Full-Rate Production decision.
- Preliminary IOT&E results indicate that the HC/MC-130J provides the capability to perform the CSAR and SOF missions as well as or better than legacy aircraft in many aspects. The improved propulsion system enables better tactical take-off performance from short, unimproved runways and expands the flight envelope for aerial refueling. The C-130J enhanced cargo handling system greatly improved loading, unloading, and airdrop operations relative to legacy aircraft. There were deficiencies in the following areas:
  - Current airdrop procedures result in very high workload and head-down time for the pilot monitoring airdrop and should be revised.
  - Crews commented that the lack of a tactical datalink, such as Link 16, limited their situational awareness. The C-130J Block Upgrade 7.0 was planned to provide Link 16, but the C-130J program has deferred fielding of Block Upgrade 7.0 until Block Upgrade 8.1 has been developed and tested.
  - Loadmasters have insufficient control over cargo compartment lighting, and the night-vision compatible lighting does not adequately support covert operations.
  - The location of some litter support strap hangers above the centerline overhead avionics equipment rack hinders configuration of the cargo compartment for medevac operations.

- Lack of several specialized features for search and rescue missions relative to legacy aircraft (flare launcher tubes, large forward scanner windows, additional oxygen regulators and intercom panels) may require ACC or the Air National Guard to make modifications to the aircraft after delivery.
- The intercom system does not transmit system tones (diagnostic or defensive system alerts) to all intercom panels in the cargo compartment, limiting loadmasters' situational awareness.
- Preliminary IOT&E results indicate that the HC/MC-130J met the required availability and mission-capable rates, met the maintenance man-hour per flight hour requirement, and demonstrated a Mean Time Between Corrective Maintenance significantly better than the combat delivery C-130J fleet.
- Preliminary IOT&E results indicate that one aspect of aircraft survivability may be degraded relative to the legacy aircraft for the intended concept of employment. Although the aircraft survivability equipment installed on the HC/MC-130J has been tested and employed on other C-130J aircraft, it may exhibit shortfalls under the new mission-specific concepts of employment.

## Recommendations

- Status of Previous Recommendations. This is the first annual report for this program.
- FY12 Recommendations. The Air Force should:
  1. Address cargo compartment lighting control by loadmasters, including AFSOC's need for blacked-out cargo compartment lighting in covert operations.
  2. Develop mitigation plans for the deferred release of Block Upgrade 7.0, including the need for a tactical datalink.
  3. Develop plan to integrate improvements of aircraft survivability equipment in future increments.