

C-130J

Executive Summary

- The Air Force Operational Test and Evaluation Center (AFOTEC) conducted the C-130J Block Upgrade 8.1 (BU8.1) IOT&E from July through October 2018, primarily operating out of Little Rock AFB, Arkansas.
- The cybersecurity Cooperative Vulnerability and Penetration Assessment (CVPA) in 2017 had technical shortfalls limiting DOT&E's ability to evaluate the cybersecurity posture of the C-130J. AFOTEC is working with the 57th Information Aggressor Squadron (IAS) to remedy those data shortfalls in preparation for the Adversarial Assessment (AA) in March 2019.

System

- The C-130J is a medium-sized four-engine turboprop tactical transport aircraft.
- The C-130J digital avionics and navigation systems enabled the Air Force to reduce the flight deck aircrew to two pilots, eliminating the navigator and flight engineer positions. Since fielding the C-130J, the Air Force has been implementing periodic Block Upgrades to improve workload and human factors for the reduced aircrew.
- BU8.1 provides navigation and communication updates to the C-130J to comply with International Civil Aviation Organization (ICAO) requirements and ensure continued access to civil airspace. It will field a Link 16 capability and deficiency corrections that were provided by the Block Upgrade 7.0, which the Air Force did not field after developmental testing.

Mission

- Combatant Commanders use the C-130J within a theater of operations for Combat Delivery missions which include:
 - Airdrop of paratroopers and cargo (palletized, containerized, bulk, and heavy equipment)
 - Airlift delivery of passengers, troops, and cargo
 - Emergency aeromedical evacuations



- Combat Delivery units operate globally in civil-controlled airspace and in all weather and lighting conditions.

Major Contractor

Lockheed Martin Aeronautics Corporation – Fort Worth, Texas

Activity

- In March 2018, the C-130J BU8.1 aircraft participated in the Developmental Test Navigation Festival (DT NAVFEST) GPS denial exercise with the 746th Test Squadron at White Sands Missile Range, New Mexico.
- AFOTEC began IOT&E with two BU8.1 aircraft at Little Rock AFB on July 9, 2018. IOT&E aircrews participated in a Green Flag joint exercise and completed equatorial-, date line-, and Prime Meridian-crossing missions with oceanic and International Civil Aviation Organization (ICAO) airspace operations. IOT&E concluded in October 2018, with the

exception of the cybersecurity AA, which is scheduled for March 2019.

Assessment

- The C-130J Block 8.1 does not have an operationally representative mission planning capability. In 2016, the Air Force Life Cycle Management Center (AFLCMC) mission planning office decided not to develop the C-130 legacy mission planning system for the Block 8.1 configuration. AFLCMC is working to field a C-130 Aircraft Weapons

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Electronics Joint Mission Planning System (JMPS) for Block 8.1 to Air Mobility Command. In the absence of a mission planning capability, Air Force Program Office engineers are providing C-130J formatted initialization data loads to aircrews to support Link-16 operability on applicable IOT&E missions, while aircrews manually enter mission data to the aircraft for other systems.

- The 2017 CVPA limited DOT&E's ability to evaluate the cybersecurity posture of C-130J because the test team did not have access to tools for some systems within the cybersecurity

test boundary. The 57th IAS conducted a system survey in advance of supporting the AA in order to address shortfalls in the data provided by the CVPA.

- Data analysis in ongoing.

Recommendations

The Air Force should.

1. Provide a operationally representative JMPS for Block 8.1
2. Complete an AA