AH-64E Apache

Executive Summary
- The Army submitted an AH-64E Version 6 Test and Evaluation Master Plan (TEMP) dated October 19, 2016, for OSD approval. The purpose of the TEMP is to support the FOT&E II of the Version 6 AH-64E and a subsequent Post-Full-Rate Production Cut-in Review. The TEMP adequately addresses the operational, cybersecurity, and live fire portions.
- The Director approved the TEMP on November 9, 2016.

System
- The AH-64E is a modernized version of the AH-64D Attack Helicopter. The Army intends to sustain the Apache fleet through the year 2040. The AH-64E is organized in Attack/Reconnaissance Battalions assigned to the Combat Aviation Brigades. Each Battalion has 24 aircraft.
- The Army redesignated the AH-64D Apache Block III as the AH-64E in September 2012.
- The AH-64E's advanced sensors, improved flight performance, and ability to integrate off-board sensor information provide increased standoff and situational awareness in support of the joint force.
- The AH-64E is fielded in two Versions (1 and 4) with a future Version 6 planned in 2017.
- The major Version 1 AH-64E capability improvements included:
  - The ability of the aircrew to control the flight path and the payload of an Unmanned Aircraft System
  - Improved aircraft performance with 701D engines, composite main rotor blades, and an improved rotor drive system
  - Enhanced communication capability, which includes satellite communication and an integrated communication suite to meet global air traffic management requirements
- Version 4 AH-64E retained Version 1 capabilities and added hardware and software for Link 16 network participation.
- The future Version 6 will add multiple enhancements to include:
  - Radar Frequency Interferometer (RFI) passive ranging
  - Fire Control Radar range extension

  - Cognitive Decision Aiding System
  - Maritime Targeting mode
  - Modernized Day Sensor Assembly with color and high definition displays
- The Army acquisition objective is to procure 690 AH 64E aircraft: 634 remanufactured and 56 new build aircraft.

Mission
The Joint Force Commander and Ground Maneuver Commander employ AH-64E-equipped units to shape the area of operations and defeat the enemy at a specified place and time. The Attack/Reconnaissance Battalions assigned to the Combat Aviation Brigade employ the AH-64E to conduct the following types of missions:
- Attack
- Movement to contact
- Reconnaissance
- Security

Major Contractors
- Aircraft: The Boeing Company Integrated Defense Systems – Mesa, Arizona
- Sensors and Unmanned Aircraft System datalink: Longbow Limited – Orlando, Florida, and Baltimore, Maryland

Activity
- The Army submitted an AH-64E Version 6 TEMP dated July 29, 2016, for OSD approval in September 2016. The purpose of the TEMP is to support the FOT&E II of the Version 6 AH-64E and a subsequent Post-Full-Rate Production Cut-in Review. The Army submitted this particular TEMP as a draft for ongoing developmental testing.
- The Army resubmitted an updated version of the TEMP, dated October 19, 2016. The TEMP adequately addresses previous shortcomings from the July version of the TEMP to include operational, cyber, and live fire portions.
- The Director approved the TEMP on November 9, 2016. The Apache Program Management Office (PMO) established

a contract with Boeing that began in April 2015 to address cybersecurity deficiencies from FOT&E I. The Cooperative Vulnerability and Penetration Assessment (CVPA) and Adversarial Assessment (AA) are planned for FOT&E II.

Assessment
- Version 4 AH-64E and its interfacing systems have potentially significant cybersecurity deficiencies. Further testing of the AH-64E embedded systems is necessary to determine the significance of the deficiencies.
- Version 4 AH-64E embedded systems are vulnerable to cyber penetration attacks. The AH-64E has been selected by Headquarters, Department of the Army G3/5/7 as one of the five systems to complete an evaluation of cyber vulnerabilities to comply with the National Defense Authorization Act Section 1647 directive. Additionally, the PMO has scheduled a CVPA conducted by the Army Research

Laboratory/Survivability Lethality Analysis Directorate for January 2017 and an AA planned for October 2017 as part of FOT&E II.

Recommendations
- Status of Previous Recommendations. The Army has addressed some recommendations from the FY14 annual report. The following recommendations have not been fully implemented:
  1. Improve infrared countermeasures performance, upgrade radar- and laser-warning systems, and improve integration of aircraft survivability equipment on the Version 4 AH-64E.
  2. Address demonstrated cybersecurity vulnerabilities. Plan and conduct unconstrained exploitation of vulnerabilities during adversarial cybersecurity testing.
- FY16 Recommendations. None.