

AIR FORCE PROGRAMS

National Airspace System (NAS)

SUMMARY

- DoD National Airspace System (NAS) testing includes two Multi-service Operational Test and Evaluation (MOT&E) events; MOT&E 3 for the end-to-end testing of the DoD NAS system-of-systems is in progress.
- Prior testing revealed effectiveness and suitability issues with the Digital Airport Surveillance Radar (DASR) and the DoD Advanced Automation System (DAAS).
- The NAS MOT&E 3 Test and Evaluation Master Plan and the MOT&E 3 test plan approved in June and July 2004, respectively, are adequate for evaluating the DoD NAS in the DoD operational environment.

SYSTEM DESCRIPTION AND MISSION

The DAAS and the DASR are components of the NAS modernization, a joint effort with the Federal Aviation Administration (FAA) to upgrade air traffic control (ATC) equipment supporting radar and approach control missions. According to the NAS Mission Need Statement developed by the Air Force Flight Standards Agency, the NAS supporting the Department of Defense must be fully interoperable with the FAA's modernization of NAS facilities. The DoD NAS equipment must be capable of providing FAA-equivalent ATC services to civil and military aircraft, avoiding mission delays or cancellations, maintaining flight safety; and limiting access to and controlling operations within special use airspace. Key elements of effective control of air traffic include establishing radar identification; establishing voice communications; separating, sequencing, and expediting aircraft; initiating or receiving handoffs; and providing additional services as stated in the FAA air traffic controller's handbook. The military operates within NAS to maintain and support the wartime readiness of air crews and air traffic controllers and maintainers. Continental United States ATC facilities prepare controller and maintenance personnel for wartime deployment and overseas and offshore assignments. The DoD NAS also includes the Voice Communication Switching System (VCSS), which received a full-rate production decision in November 1999. The NAS ties the air traffic controller, air crews, and ground personnel into a communications network. Together, the VCSS, DAAS, and DASR will provide interoperability with the FAA ATC systems and ensure that DoD ATC service supports civil and military operations, combat readiness training, and management of assigned airspace.

The FAA is the lead agency for the DAAS acquisition whereas the DoD is the lead agency for the DASR acquisition. The DoD and the FAA are jointly procuring the DAAS through the FAA's Standard Automation Replacement System program and are procuring the DASR through the DoD's contracting channels. The DAAS and the DASR will satisfy the DAAS requirements documented in the NAS Operational Requirements Document II.

The Raytheon Corporation designed the DAAS to support the automation capabilities of ATC operations at Army, Navy, Air Force, and FAA airport control towers, at DoD radar approach control facilities, and at FAA Terminal Radar Approach Control facilities. The DAAS will replace outdated and difficult-to-maintain terminal automation systems, including the FAA's Automated Radar Terminal System and the DoD's Programmable Indicator Data Processor.



The DoD NAS equipment must be capable of providing FAA-equivalent air traffic control services to civil and military aircraft.

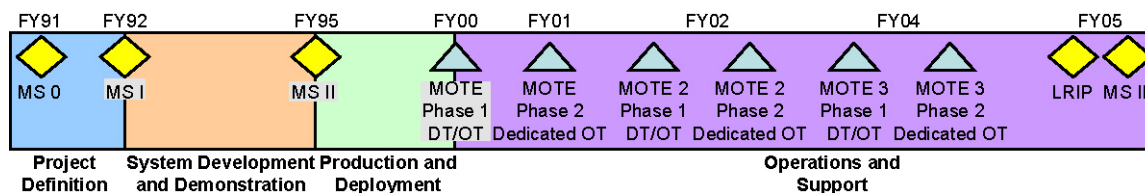
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The DAAS receives and processes primary and secondary radar data, flight plans, weather and airport environmental data, and administrative information required for facility operations. It accepts data from airport surveillance radars and long-range radars. It also accepts from and provides data to the FAA's En Route Traffic Control Centers, to provide seamless coverage and flight management from takeoff at one airport to landing at a distant one.

The Raytheon Corporation designed the DASR to detect aircraft position and weather conditions in the vicinity of civilian and military airfields. The DASR, also known as the Airport Surveillance Radar 11 (ASR-11) system, will replace existing ASR-7, ASR-8, and AN/GPN-12, AN/GPN-20, and AN/GPN-27 systems. The DASR improves reliability, provides additional weather data, reduces maintenance costs, improves performance, and provides digital data to the DASR for presentation on controller radar displays.

The DASR Primary Surveillance Radar provides primary radar data ("skin paint") to control towers and radar approach controls. The DASR Monopulse Secondary Surveillance Radar (transponder beacon radar) provides identity and altitude data to control towers and radar approach controls. The Monopulse Secondary Surveillance Radar gives controllers rapid and accurate means of correlating radar targets displayed on the screen with the flight data plan.

TEST AND EVALUATION ACTIVITY



The DoD NAS MOT&E 3 is ongoing at Moody Air Force Base, Georgia. Operational Requirements Document II user-validated requirements guided development of the MOT&E 3 test program. MOT&E 3 results are to support the Milestone III decision.

TEST AND EVALUATION ASSESSMENT

The Air Force found the VCSS operationally effective, but not operationally suitable as a result of the VCSS DoD MOT&E in 1999. DOT&E reviewed corrective actions taken after the MOT&E and found them adequate to rectify the suitability shortcomings. The full-rate production decision was executed in November 1999.

The MOT&E concept for DAAS and DASR included two phases of testing, Phase 1 (developmental test/operational test) and Phase 2 (dedicated operational testing). DAAS and DASR have been through two rounds of MOT&E, conducted from October 1999 through September 2002. In each round of operational testing, the Air Force identified significant numbers of critical deficiencies, and while they eventually rated the DAAS operationally effective and operationally suitable in June 2001, the DASR was last rated by the Air Force as not effective and not suitable in a February 2003 MOT&E 2 status report.

Based upon Milestone Decision Authority direction in November 2002, the Air Force Acquisition Executive, the NAS Program Office, and the Air Force developed a new way ahead for NAS, leveraging the results of FAA testing to the extent possible, and planning for another round of MOT&E with DoD production representative test articles in the DoD environment.

Since the MOT&E 3 is still ongoing, additional assessments at this time would be premature. Independent evaluation of MOT&E 3 results will form the basis of the DOT&E's beyond low-rate initial production report.