B-52 Radar Modernization Program (RMP)



Modification of B-52 Radar Modernization Program (RMP) test aircraft and development of initial system flight software began in FY23. Developmental and integrated flight testing are planned to begin in FY26. DOT&E will evaluate integrated test data for potential to reduce FY28 IOT&E requirements. Full-rate production (FRP) will follow completion of system development. Exact dates are uncertain due to technical and schedule risks.

SYSTEM DESCRIPTION

The B-52 RMP will replace the legacy APQ-166 radar with the

modified AN/APQ-188 Bomber Modernized Radar System, which is a variant of the radar currently used on the F/A-18 and F-15E/EX. Replacement of the aging legacy radar is intended to increase system reliability and reduce sustainment costs. The Bomber Modernized Radar System will also provide new high-resolution ground mapping capabilities to improve target location accuracy and capabilities to track moving surface and air targets.

MISSION

Theater commanders will use units equipped with the RMP-modified B-52 to conduct long-range, allweather conventional and nuclear strike operations that employ a wide range of munitions against ground and maritime targets in low-to-medium adversary threat environments. B-52 theater mission tasks include strategic attack, time-sensitive targeting, air interdiction, close air support, suppression/destruction of enemy air defenses, maritime mining, and nuclear deterrence.

PROGRAM

The B-52 RMP is an Acquisition Category IB Major Defense Acquisition Program. DOT&E approved the B-52 RMP TEMP in April 2021. In June 2021, the Air Force completed the Milestone B (MS B) decision and awarded a five-year engineering and manufacturing development contract to Boeing. A two-part MS C decision is planned in 2Q and 4QFY26 to modify 28 lowrate initial production aircraft. An FRP decision for the remaining 46 aircraft will follow IOT&E execution in FY28. Exact dates are uncertain due to technical and schedule risks.

The program completed Critical Design Review in February 2022. The Air Force continues to refine the system radome design to address aircraft integration issues. Depending on final radome design, radar performance may be impacted. The program office should fully characterize performance with the final radome design to inform operational employment tactics. Modification of test aircraft and development of initial system flight software began in FY23. Delays related to integration challenges have shifted the planned start of developmental and integrated flight testing to FY26, leading to IOT&E in FY28.

The program office has identified necessary system design changes to manage system integration. These changes should be implemented and evaluated to inform operational employment tactics.

Installation of the Tactical Data Link communication system upgrade is necessary to complete RMP operational test requirements. The program office has dedicated sufficient modification kits to ensure timely support to test aircraft for these requirements.

The Air Force successfully leveraged DOT&E-sponsored funding to modernize B-52 test data collection and processing infrastructure. New B-52 data acquisition technologies have been successfully paired with a government-owned knowledge management system to implement cutting-edge data collection, management, and processing capabilities. Application of big data analytics has improved the quality, depth, and speed of post-mission data processing for current B-52 upgrade programs and hypersonic weapons testing. The program office is exploring expansion of the system to other government and vendor sites to support distributed test operations.

DOT&E approved the B-52 Cybersecurity TES in September 2023. This strategy defines a comprehensive, integrated cybersecurity test approach across all planned modernization programs, including the Commercial Engine Replacement Program, RMP, and multiple communication system upgrade programs. DOT&E requires an RMP-specific updated strategy prior to the first MS C decision point, which is scheduled for 2QFY26.

» MAJOR CONTRACTORS

- The Boeing Company Oklahoma City, Oklahoma
- Raytheon, a subsidiary of RTX
 Arlington, Virginia

TEST ADEQUACY

DOT&E approved the B-52 RMP TEMP in April 2021. The TEMP defines an adequate operational test strategy and necessary resources for integrated testing and IOT&E. The B-52 Cybersecurity TES defines an adequate cybersecurity test approach across all B-52 modernization programs, but it will require an RMP-specific update prior to the first MS C decision point.

» EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY

Modification of two test aircraft and development of initial system flight software began in FY23. Developmental and integrated flight testing are scheduled to begin in FY26. DOT&E will evaluate integrated test data for potential to reduce IOT&E requirements. DOT&E will assess operational effectiveness, suitability, and survivability following IOT&E in FY28.

RECOMMENDATIONS

The Air Force should:

- Evaluate and implement system design changes necessary to manage system integration, as recommended in the FY23 Annual Report.
- 2. Evaluate system changes to characterize radar operations based on the final radome design.
- Develop and submit, for DOT&E approval, an RMP-specific, updated Cybersecurity TES prior to the first MS C decision point.