

Mounted Assured, Positioning, Navigation, and Timing System (MAPS)



Left: GEN II MAPS Navigation Receiver | Right: GEN II Anti-Jam Antenna System

The Mounted Assured, Positioning, Navigation, and Timing System (MAPS) performed better than legacy Positioning, Navigation, and Timing (PNT) systems in GPS-degraded or denied environments during the 4QFY21 Limited User Test (LUT). The MAPS Generation (GEN) II program continued with developmental testing in FY22. MAPS transitioned from prototyping under an Other Transaction Authority contract to an Acquisition Category II program of record at Milestone C in June 2022.

SYSTEM DESCRIPTION

The GEN II MAPS will replace the legacy Defense Advanced GPS Receiver (DAGR) GPS receivers and antennas in a subset of the Army's ground vehicles. MAPS GEN II has non-GPS augmentation technologies and an anti-jam antenna allowing limited

functionality of position and time accuracy in a GPS-contested environment. MAPS incorporates the new Military Code GPS satellite signal which is more resistant to jamming and spoofing than the current GPS signal used by the military.

MISSION

A unit equipped with MAPS employs trusted PNT information to conduct operations in degraded/denied GPS environments, such as dense vegetation, built-up urban and mountainous terrain, and in the presence of electromagnetic interference or enemy jamming and spoofing of the GPS.

PNT information derived from MAPS enables positioning of forces; navigation across the operational environment; communication networks; situational awareness applications; and protection, surveillance, targeting, and engagement systems that contribute to combined arms maneuver.

PROGRAM

In 2019, the Army Futures Command issued a directed requirement for the PNT Program Manager to conduct a technical assessment of the MAPS GEN II capability to inform requirements and follow-on programs of record. The Commanding General, Army Futures Command approved the MAPS Capabilities Development Document in September 2020. The Army intends MAPS GEN II to replace existing GPS receivers and antennas in a subset Army ground vehicle variants. Following competition between three vendors, the Army selected Collins Aerospace to provide the MAPS GEN II solution.

MAPS GEN II entered program of record status at Milestone C as an Acquisition Category II, Major Capability Acquisition program in June 2022. DOT&E approved the MAPS Milestone C Test and Evaluation Master Plan (TEMP) in April 2022.

» MAJOR CONTRACTOR

- Collins Aerospace, a subsidiary of Raytheon Technologies – Cedar Rapids, Iowa

TEST ADEQUACY

The Army conducted the MAPS LUT in September 2021 in accordance with a DOT&E-approved test plan, and observed by DOT&E. The LUT was adequate to assess the performance of MAPS GEN II and the DOT&E MAPS LUT report informed the Army's decision to transition to an Acquisition Category II program of record at Milestone C.

Developmental testing of MAPS is ongoing as outlined in the MAPS TEMP. During May-June 2022, Army Test and Evaluation Command conducted environmental, electromagnetic interference, software safety, and acoustic noise testing at the Army's Electronic Proving Ground, Fort Huachuca, Arizona. Analyses of the developmental test data is ongoing by the Army.

The Army has addressed a DOT&E recommendation from the 2021 Annual Report and has found a suitable location to conduct IOT&E in 4QFY23 in accordance with the DOT&E-approved test plan.

PERFORMANCE

» EFFECTIVENESS

A unit equipped with MAPS demonstrated the ability to conduct reconnaissance and casualty evacuation missions in most contested GPS environments during the LUT. The MAPS improved situational awareness, assisted individuals and units with navigation, and allowed the unit

to maintain tempo while moving to various objectives in contested GPS environments. The classified MAPS LUT report published in February 2022 provides details on system and unit performance.

» SUITABILITY

The MAPS demonstrated an operational availability exceeding the requirement. Training was sufficient for soldiers to operate MAPS. The classified MAPS LUT report provides details on operational suitability.

» SURVIVABILITY

An adversarial cybersecurity developmental test was conducted during the MAPS LUT. The results can be found in the classified MAPS LUT report. The Army plans to conduct an adversarial assessment in conjunction with the IOT&E in FY23.

RECOMMENDATION

The Army should:

1. Verify correction of system performance, suitability, and survivability deficiencies identified in the LUT prior to IOT&E.