

Dismounted Assured, Positioning, Navigation, and Timing System (DAPS)



In March 2023, DOT&E published a classified operational assessment (OA) report for the Dismounted Assured, Positioning, Navigation, and Timing System (DAPS) GEN II, based on a Limited User Test conducted by the Army Test and Evaluation Command (ATEC) at Fort Huachuca, Arizona in November 2022 in support of successful transition from rapid prototyping to major capability acquisition program at Milestone C (MS C). The DAPS GEN II performs better than the current Defense Advanced GPS Receiver (DAGR) in the presence of GPS interference or enemy electronic warfare (EW) attacks. The DAPS GEN II IOT&E is planned to be conducted in 1QFY24 and will support a full-rate production decision in 3QFY24.

SYSTEM DESCRIPTION

DAPS is a handheld Military-Code (M-Code) GPS receiver that integrates other Positioning, Navigation, and Timing (PNT) sources to provide Army forces with access to trusted PNT information in conditions where GPS signals may be degraded or denied. DAPS supports the Army's transition to M-Code GPS and will replace the DAGR currently used by Nett Warrior equipped soldiers.

DAPS GEN 1.0 includes a boot attached inertial module to improve position and navigation accuracy based on soldier footsteps. Soldiers interface with the DAPS GEN 1.0 using the Nett Warrior End User Device (EUD). DAPS GEN 1.2 has an internal rechargeable battery as well as internal inertial module and alternative satellite reception capabilities. DAPS GEN 1.2 can be used in a stand-alone mode or with the Nett Warrior EUD interface. DAPS GEN II is an improved version of DAPS GEN 1.2 with an external rechargeable battery, redesigned screen and soldier interface, and improved PNT data fusion capability. DAPS GEN II can be used in a stand-alone mode, with the wrist wearable device, or with the Nett Warrior EUD interface.

MISSION

A unit equipped with DAPS will use their trusted PNT information to conduct operations in conditions

that impede or deny access to GPS signals, such as dense vegetation, built-up urban and mountainous terrain, and in the presence of electromagnetic interference or enemy EW attacks.

PNT information derived from DAPS directly 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

DAPS GEN 1.0 and DAPS GEN 1.2 are quick reaction capabilities developed in response to an Army-directed requirement culminating in an OA in 4QFY21 and a limited equipping of four infantry brigade combat teams (IBCT) beginning in FY22. As of 4QFY23, one IBCT has been equipped with 611 DAPS GEN 1.0 units and two IBCTs have been equipped with 1,390 DAPS GEN 1.2 units. All DAPS GEN 1.0 deliveries are complete and one additional IBCT will be equipped with 629 DAPS GEN 1.2 in 1QFY24.

In early FY22, the Army selected TRX Systems Inc. as the vendor for the DAPS GEN II rapid prototyping program. In March 2023, DAPS GEN II transitioned from rapid prototyping to a major capability acquisition program at MS C with a DOT&E-approved MS C Test and Evaluation Master Plan. The Army plans to conduct the DAPS GEN II IOT&E in 1QFY24 to support a

full-rate production decision in 3QFY24.

» MAJOR CONTRACTORS

- Integrated Solutions for Systems, Inc. – Auburn, Alabama (DAPS GEN 1.0)
- TRX Systems Inc. – Greenbelt, Maryland (DAPS GEN 1.2 and DAPS GEN II)

TEST ADEQUACY

In November 2022, ATEC conducted a LUT with a cyber survivability adversarial assessment (AA) at Ft. Huachuca, Arizona in accordance with a DOT&E-approved test plan and TEMP. The LUT and AA were observed by DOT&E. The LUT was adequate to determine that DAPS GEN II is on track to achieving operational effectiveness and suitability by IOT&E. DOT&E published a classified OA report in March 2023, supporting the Army's decision to proceed to Low-Rate Initial Production at MS C.

The Army addressed FY22 Annual Report recommendations to verify the correction of performance deficiencies prior to conducting the LUT.

PERFORMANCE

» EFFECTIVENESS

During the LUT, dismounted infantry units equipped with DAPS GEN II demonstrated the potential to be operationally effective while

conducting tactical missions. The DAPS GEN II performs better than the current DAGR in GPS contested environments and improves the Soldiers situational awareness, supports navigation, and allows the unit to maintain operational tempo while moving between objectives. During the LUT, the DAPS was not consistently accurate at notifying soldiers to the presence of GPS interference and EW attacks. Further development and testing are necessary to improve the accuracy of DAPS GEN II EW notification capability. Additional details are contained in the March 2023 classified OA report.

» **SUITABILITY**

The DAPS GEN II did not meet its reliability growth curve estimate during the LUT, though demonstrated the potential to be operationally suitable due to the rapid reparability of the failures and a high availability rate. The primary failure mode was a software fault which resulted in re-occurring connectivity issues. The DAPS Program Office is implementing and testing a fix for these issues. Training was sufficient for Soldiers to operate the DAPS GEN II, though they would prefer more options to train in live or simulated GPS contested environments. The Army should include the use of the existing built-in EW simulation mode during new equipment training. Additional details are contained in the March 2023 classified OA report.

» **SURVIVABILITY**

DAPS GEN II demonstrated the potential to be survivable with just one classified finding during the AA conducted in November 2022. A follow-on DAPS GEN II cooperative vulnerability and penetration assessment was conducted in September 2023 and results will inform an AA to be conducted during the IOT&E.

RECOMMENDATIONS

The Army should:

1. Improve DAPS consistency when notifying soldiers to the presence of GPS interference and EW attacks to improve soldier and unit situational awareness.
2. Verify through testing that the software fault has been corrected prior to IOT&E.
3. Include the use of DAPS built-in EW simulation mode during new equipment training.