

Next Generation Jammer Mid-Band (NGJ-MB)



The Next Generation Jammer Mid-Band (NGJ-MB) is currently undergoing integrated testing and is scheduled to begin dedicated operational testing during IOT&E in May 2023. The program is focusing on resolving deficiencies that were identified prior to Milestone C while demonstrating the system has matured enough to conduct operationally relevant test flights. The lack of verified, validated and accredited (VV&A) digital models required to supplement NGJ-MB operational flight test data will reduce the confidence of the effectiveness evaluation during IOT&E.

SYSTEM DESCRIPTION

The NGJ-MB is an airborne electronic attack system. It consists of two pods, mounted under each EA-18G aircraft wing, which integrate with the AN/ALQ-218 electronic warfare system and function as a radio frequency (RF) receiver and jammer. Each pod contains two active electronically scanned arrays that radiate over a wide frequency band and an internal ram-air turbine that generates electrical power. The NGJ-MB is the first of three programs comprising the planned Next Generation Jammer upgrade that is intended to replace the legacy AN/ALQ-99 Tactical Jammer System family of pods currently fielded on the EA-18G. The NGJ-MB is designed to engage multiple advanced threats at greater standoff ranges than the AN/ALQ-99 Tactical Jammer System.

MISSION

Combatant Commanders will employ the NGJ-MB equipped EA-18Gs as an embedded component of carrier air wings and expeditionary forces to provide EA capabilities against a wide variety of RF targets. The NGJ is designed to improve EA-18G capability against modern, advanced RF threats, communications, datalinks, and non-traditional RF targets.

The NGJ-MB has four electronic attack mission profiles: standoff,

modified escort, penetrating escort, and stand-in jamming. Navy aircrew will primarily fly the standoff and modified escort profiles. The Navy will use the NGJ to deny, degrade, or deceive the enemy's use of the electromagnetic spectrum, employing both reactive and preemptive jamming techniques while enhancing the friendly force's use of the electromagnetic spectrum.

PROGRAM

The NGJ-MB is an Acquisition Category IC program. In May 2021, the Secretary of the Navy approved the NGJ-MB program to move past Milestone C, thereby authorizing procurement of low-rate initial production (LRIP) pods. Redesigned production-representative System Demonstration Test Article (SDTA) pods are currently undergoing integrated testing and are scheduled to begin operational test in May 2023. NGJ will replace the ALQ-99 Tactical Jammer System pods which were developed and fielded in 1971.

Per the DOT&E approved TEMP, NGJ-MB was originally slated to integrate as part of Software Configuration Set (SCS) H16 block upgrade. SCS block upgrades, labeled in numeric order, are a separate but parallel flight test for the EA-18 Growler program, and the current operational software is SCS H14. Delays in the NGJ program have deferred SCS integration to the H18 block upgrade.

The lack of validated or accredited digital models needed to supplement NGJ-MB operational flight testing will reduce the data available to evaluate effectiveness during NGJ-MB IOT&E. In addition, test data classification has prevented all required modeling and simulation (M&S) personnel from analyzing available data. To address this risk, the Navy implemented a series of flights in an operationally representative environment to ensure sufficient modeling data will be available to supplement operational test flights and generate data necessary for verification, validation, and accreditation of M&S. The simulated operational environment includes large-force exercises in a threat-representative environment. These flights also serve as risk-reduction for planned EA-18G H18 SCS test flights with NGJ-MB. The EA-18G H18 SCS requires significant maturation to support NGJ-MB operational test. The Navy still needs to address problems with data classification and personnel access to support M&S validation.

» MAJOR CONTRACTORS

- Raytheon Space and Airborne Systems – El Segundo, California
- The Boeing Company, Integrated Defense Systems – St. Louis, Missouri
- Northrop Grumman Mission Systems – Linthicum, Maryland

TEST ADEQUACY

The Navy did not conduct dedicated operational tests on the NGJ-MB system during FY22. However, the Navy is conducting a combination of laboratory, anechoic chamber, and integrated flight testing to address concerns identified at Milestone C and to mature the system to conduct operationally relevant test flights to support IOT&E.

PERFORMANCE

» EFFECTIVENESS

The Navy conducted integrated testing with Capabilities-Based Test and Evaluation events during 4QFY22. Raytheon and the Navy made progress using NGJ-MB software updates to improve system performance in several areas to address deficiencies present at Milestone C. However, the program still does not meet all Milestone C requirements and the NGJ-MB SDTA pods have not proven mature enough to

conduct operational test flights. As a result, the operational test flights originally planned for the Capabilities-Based Test and Evaluation period will now be conducted during IOT&E.

» SUITABILITY

The Navy continues to develop corrective actions to mitigate reliability failures, but no additional data have been provided by the Navy to update pod reliability since Milestone C. These deficiencies in reliability and performance resulted in a decision to delay the NGJ-MB Operational Test Readiness Review until April 2023, further delaying the decision to enter the operational test phase.

» SURVIVABILITY

Cyber testing was conducted in October 2021, March 2022, and July 2022 to collect data and identify vulnerabilities in a cyber-contested environment. Results of developmental cyber testing will be reported prior to January 2023. The

program is working with Raytheon to resolve identified vulnerabilities.

RECOMMENDATIONS

The Navy should:

1. Prepare to extend IOT&E past the currently scheduled end date of 4QFY23 given the uncertainty around the availability and reliability of operational test-ready LRIP pods and the maturity of SCS H18.
2. Continue to develop digital models and assesses operationally representative flights to ensure necessary data are available for verification, validation and accreditation of digital models for evaluation.
3. Obtain required security clearances for M&S personnel so they can access test facilities and data needed to support accreditation of M&S in order to evaluate operational effectiveness.