

Joint Precision Approach and Landing System (JPALS)

Executive Summary

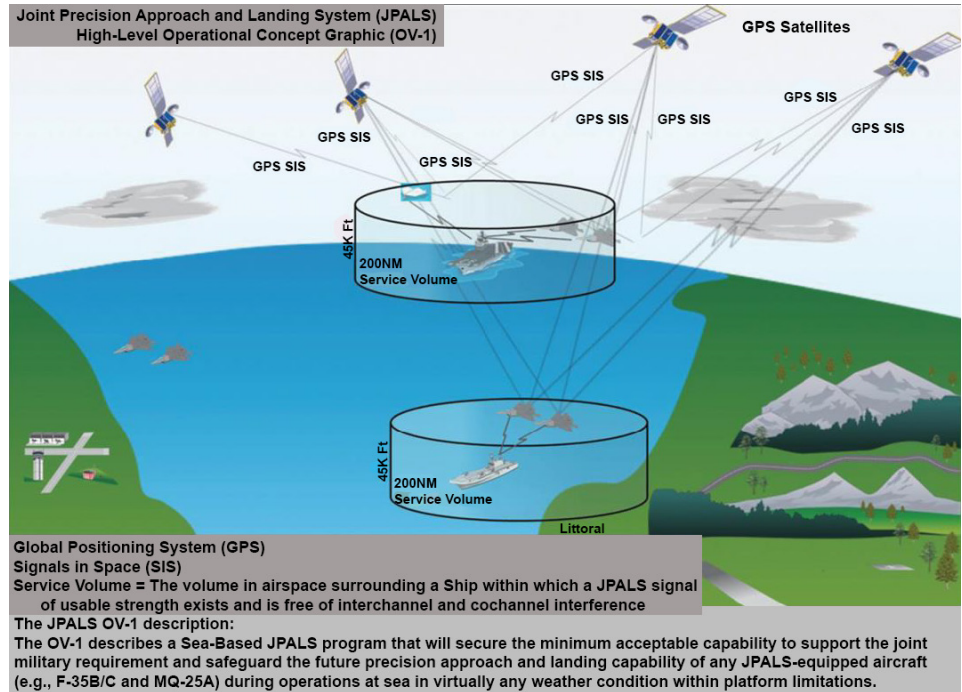
- The Navy Commander, Operational Test and Evaluation Force (OPTEVFOR) conducted IOT&E Phase I for the Joint Precision Approach and Landing System (JPALS) Block 0 One-Way capability from October 2017 to March 2019. This testing was conducted to support an Early Operational Capability (EOC) of JPALS for use with Fleet F-35B aircraft deployment to amphibious assault ships.
- DOT&E determined JPALS Block 0 One-Way capability is operationally effective and suitable for the Navy's EOC.
- DOT&E approved the Milestone C Test and Evaluation Master Plan (TEMP) in March 2019.
- OPTEVFOR conducted operational testing aboard USS *Dwight D. Eisenhower* (CVN 69) in April 2019 to support the JPALS Block 1 Two-Way capability Operational Assessment (OA). During shipboard testing, pilots completed the requisite number of JPALS auto-piloted approaches and landings, with the plan to complete the OA in FY20.
- JPALS Block 1 Two-Way capability IOT&E Phase II planning is currently in progress.

System

- JPALS is composed of modular open system hardware and software components integrated with shipboard Air Traffic Control and landing system architectures for JPALS data display and functional operation.
- JPALS major subsystems include the GPS sensor, navigation processing, datalink, ship motion sensor, maintenance, and ship interface subsystems.
- JPALS Block 0 is an interim solution/EOC of JPALS, specifically to support the F-35B. Block 0 uses an ultrahigh frequency (UHF) One-Way datalink broadcast to transmit a subset of the JPALS precision approach data and on-deck Inertial Navigation System alignment from ship to aircraft.
- JPALS Block 1 will further support the F-35B/C and MQ-25A with an UHF Two-Way datalink broadcast capability by

Activity

- OPTEVFOR completed IOT&E Phase I of JPALS Block 0 One-Way capability for F-35B/C aircraft approaches to aircraft carriers and amphibious assault ships. Testing was conducted



providing the accuracy, integrity, and continuity required for future F-35C and MQ-25A autoland capability on CVN-type ships and F-35B coupled flight capability on LH-type ships.

Mission

- Operational Commanders will use units equipped with JPALS Block 0 to achieve precision approach and landing capability for F-35B aircraft deployed to amphibious assault ships with minimal effect from conditions at point of departure or landing.
- Operational Commanders will use units equipped with JPALS Block 1 to achieve precision approach and landing capability for F-35B/C and MQ-25A for stand-alone or close-proximity air operations with CVN- and LH-type ships throughout the world.

Major Contractor

Raytheon Network Centric Systems – Fullerton, California

from October 2017 to March 2019 to support the Navy's June 2018 EOC declaration.

FY19 NAVY PROGRAMS

- DOT&E approved the JPALS Milestone C TEMP in March 2019.
- OPTEVFOR conducted testing aboard USS *Dwight D. Eisenhower* (CVN 69) in the Virginia Capes Operating Area in April 2019 to support the JPALS Block 1 Two-Way capability OA. Testing was executed concurrently with developmental testing as part of an integrated test.
- Pilots completed 21 approaches, 14 of which included autonomous JPALS assisted landings.
- A modified F/A-18C served as a JPALS Test Bed as no fleet aircraft currently can use the JPALS Two-Way capability for precision approaches to fully automated JPALS assisted landings. Fielding of JPALS Two-Way capability is not expected until F-35 Block 4.3 in FY24.
- JPALS Block 1 Two-Way capability IOT&E Phase II planning is currently in progress.

- DOT&E will release separate reports for the IOT&E JPALS Block 0 One-Way Phase I and IOT&E Block 1 Two-Way Phase II.
- All testing was conducted in accordance with a DOT&E-approved TEMP.

Assessment

JPALS Block 0 One-Way capability is operationally effective and suitable to support the Navy's EOC.

Recommendation

1. The JPALS Program Office should continue to coordinate with the F-35 and MQ-25 Program Offices to integrate testing.