DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE
WASHINGTON DC

Department of the Air Force
Scientific Advisory Board

Aircraft Operations in GPS-Jammed Environments Study (Quick Look)

Abstract

Aircraft of the USAF use the NAVSTAR Global Positioning System (GPS) to obtain the precision positioning, navigation, and timing needed for various operations, including weapon delivery and collection of ISR data. GPS jamming threatens to degrade or deny GPS to these aircraft, reducing their operational effectiveness. Various operational concepts, acquisition programs, and technology developments have been identified as candidate approaches either for improving GPS operations in jamming environments, or compensating for the denial of GPS.

This study looked at the following:

1) Discuss types of GPS jamming threats and representative scenarios for GPS jamming of aircraft.

2) Review prior work performed on ways to evaluate the effect of GPS jamming on aircraft operations, including operational effectiveness of weapon delivery and ISR operations.

3) Evaluate the ability of unjammed aircraft to use their radars to locate the jammed aircraft and transmit to the jammed aircraft its position.

4) Identify other near-term and longer-term ways of addressing GPS jamming of aircraft, and compare their effectiveness.

SAF PA Approval: 2025-0612