

JOINT GLOBAL POSITIONING SYSTEM COMBAT EFFECTIVENESS (JGPSCE)



The Joint Global Positioning System Combat Effectiveness (JGPSCE) Joint Test Force is chartered to evaluate the impact of electronic warfare targeted against global positioning system (GPS) receivers in joint operations. GPS provides highly accurate, real time, passive, common-reference grid position and time information to military and civilian users worldwide. GPS enables the military forces to determine their position, velocity, and time. GPS will: (1) enhance command and control and coordinate battle tactics and support; (2) engage in strategic and tactical warfare; (3) maneuver efficiently on the battlefield; (4) provide accurate and timely fire support; and (5) facilitate combat service support operations. In addition, knowledge of the exact position and time is essential to reconnaissance and intelligence missions.

BACKGROUND INFORMATION

In July 1999, the Office of the Under Secretary of Defense, Director, Test, Systems Engineering and Evaluation, chartered the JGPSCE joint test and evaluation (JT&E) to address three issues:

- What is the impact of GPS vulnerabilities on the effectiveness of joint operational missions requiring precision engagement?
- What changes in joint tactics, techniques, and procedures or system-level mitigation techniques improve or maintain joint operational effectiveness in the event of GPS electronic warfare and electromagnetic interference?
- What test methodologies can be employed to characterize GPS vulnerabilities in future acquisition and integration programs?

JGPSCE JT&E will conduct three phases of testing, implemented by four tests events, each examining an increasing level of warfare. The three phases of warfare are: (1) Small Scale Contingency; (2) Limited Engagement; and (3) Major Theater War. Each level represents a major concern for DoD planners today, as well as presents unique problems in maneuver, engagement, and logistics/force protection. All are highly dependent on secure, high-speed communications.

Each of the three test phases is designed to provide information relating to key information upon which warfighters can base subsequent decisions. Each phase will use jamming of GPS in the open air to

be as realistic as possible. Each phase will look at the impact of GPS electronic warfare and electromagnetic interference by comparing baseline performance to performance after the electronic warfare and electromagnetic interference occurs. Each phase will also introduce mitigation techniques and procedures developed during test planning, and look at the ability of troops and commanders to operate in a GPS degraded or denied environment. Thus, each of the three phases will be immediately useful to theater commanders and DoD.

Phase 1 testing consists of two live test events, GYPSY ALPHA and GYPSY BRAVO, at the tactical level of warfare. These tests focus on determining GPS electronic warfare and electromagnetic interference vulnerabilities and mitigations for few-on-few engagements during small-scale contingencies. Each of the two live tests in Phase 1 will concentrate on portions of the sensor-to-shooter architecture.

Phase 2 testing will consist of one live test event, GYPSY CHARLIE. The focus of this test will be on integrated system-of-systems tactical-level mission performance and integrated system-of-systems operational-level mission performance during limited engagement operations.

Phase 3 testing will consist of a single test, GYPSY DELTA, which will evaluate integrated tactical and operational level systems and warfighters performing missions during a major theater of war scenario.

Planning for GYPSY BRAVO (GB) continues with captive carry in Dec 01 at Fallon and live drop of precision weapons in Mar 02 at the UTTR (Utah Test and Training Range). GB plans focus on the F-16, F-15E, F/A-18, EA-6B, and AH-64D platforms delivering JDAM, JSOW, AGM-130, EGBU-15, and HELLFIRE.

TEST & EVALUATION ACTIVITY

GYPSY ALPHA (Field Test #1) testing was conducted during the months of October and November 2000. This test consisted of ground forces supplemented by limited airborne forces. This test was highly successful and the analysis nears completion. GYPSY ALPHA Final Report has completed external review and is in technical editing. A “road show” briefing of test results will be provided down to user level organizations.

TEST & EVALUATION ASSESSMENT

The JGPSCE JT&E program meets the stated purposes of the OSD JT&E Program and the Services and CINCs continue to support the project. Resources and planning are on track to support continued field testing. Results of this JT&E will be extremely beneficial to the execution of war fighting capability.