

Joint Global Positioning System Combat Effectiveness (JGPSCE)

SUMMARY

- JGPSCE was a five-year test that completed September 30, 2004. It was located in Kirtland AFB, New Mexico. The lead service was the Air Force.
- The JGPSCE JT&E conducted field test events representing three types of combat operations: (1) Small Scale Contingency; (2) Limited Engagement; and (3) Major Theater War.
- Field testing discovered potential weapon systems vulnerabilities under conditions of GPS degradation and denial; JGPSCE published quick look test results that provided invaluable and timely information to the warfighter currently in theater.
- JGPSCE completed closedown activities and transitioned its knowledge base and data repository to the Office of the Assistant Secretary of Defense for Networks and Information Integration (ASD(NII)) sponsored transition team with a planned integration into the U.S. Strategic Command (STRATCOM) in FY06.



JGPSCE executed the GYPSY DELTA field test as part of the Joint Forces Command Combined Joint Task Force Exercise 04-2 in June 2004.

TEST DESCRIPTION AND MISSION

The JGPSCE JT&E was chartered July 1999 to evaluate the impact of electronic warfare (EW) 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 precisely determine their position, velocity, and time. Knowledge of the exact position and time is essential to reconnaissance and intelligence missions. Effective use of GPS will: (1) enhance command and control and assure coordinated battle tactics and support; (2) support strategic and tactical warfare; (3) allow efficient maneuvering on the battlefield; (4) provide accurate and timely fire support; and (5) facilitate combat service support operations.

Field tests addressed a specific combatant command's theater of interest using: current tactics, training, and procedures; approved doctrine; actual concepts of operation; and "real" scenarios and threat lay-downs.

Each field test was designed to provide key information for warfighters to use in operational decision-making. The field tests employed open air GPS jamming representing real-world threats to evaluate the impact of GPS EW and electromagnetic interference (EMI) by comparing baseline performance to performance with EW and EMI present. Mitigation techniques and procedures were evaluated during test events, and the information was disseminated to the Services for incorporation into doctrine and tactics, techniques, and procedures. JGPSCE published quick look reports to the Services and the combatant commands immediately after each test event.

Phase 1 testing consisted of two live test events, GYPSY ALPHA and GYPSY BRAVO, at the tactical level of warfare. These tests focused on GPS EW and EMI vulnerabilities and mitigations for few-on-few engagements during small-scale contingency operations. Each live test in Phase 1 concentrated on portions of the sensor-to-shooter architecture. The GYPSY ALPHA field test, October and November 2000, exercised ground forces supplemented by limited airborne forces.

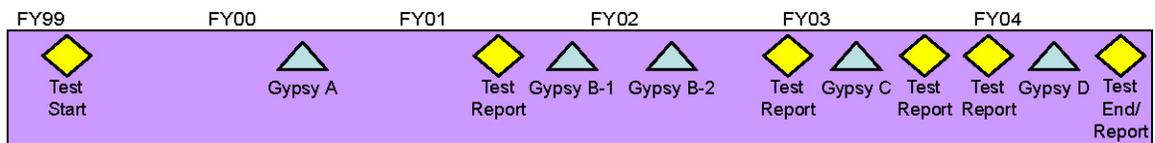
JOINT TEST & EVALUATION

The GYPSY BRAVO field test was executed in two parts, January 2002 and July 2002, exercising airborne platforms delivering precision guided munitions.

Phase 2 testing consisted of one live test event, GYPSY CHARLIE, to evaluate integrated systems-of-systems tactical and operational-level mission performance during limited engagement operations. The GYPSY CHARLIE field test, September 2003, exercised the sensor-C2-shooter kill chain prosecuting time-sensitive targets.

Phase 3 testing consisted of a single test, GYPSY DELTA, to evaluate integrated tactical- and operational-level systems with warfighters performing missions during a major theater of war scenario. The GYPSY DELTA, June 2004, focused on the joint targeting cycle.

TEST AND EVALUATION ACTIVITY



JGPSCE completed the GYPSY DELTA field test in FY04, planned for JT&E closedown and transition, and conducted numerous briefings and presentations. JGPSCE briefed GYPSY CHARLIE test results to the Services and three combatant commands.

- JGPSCE published the GYPSY CHARLIE Quick Look Report, the GYPSY CHARLIE Test Report, and two vulnerability assessment reports for specified systems evaluated in the GYPSY CHARLIE field test.
- JGPSCE executed the GYPSY DELTA field test as part of the Joint Forces Command Combined Joint Task Force Exercise 04-2 (CJTTFEX 04-2) in June 2004.
- JGPSCE published the GYPSY DELTA Quick Look Report.
- JGPSCE published the JGPSCE Joint Test Final Report including annexes on the GYPSY DELTA Test and the JGPSCE GPS Vulnerability Test Methodology.
- JGPSCE completed work on the Navigation Warfare Memorandum of Understanding Test, Trials, and Demonstrations Project Arrangement and the Test Methodology Project Arrangement.

TEST AND EVALUATION ASSESSMENT

JGPSCE provided rapid feedback to the warfighter community through quick look reports and briefings. JGPSCE addressed its three core issues through live test events:

- Evaluating joint warfighters performing operationally realistic tasks and missions under GPS EW and EMI.
- Evaluating effectiveness of tactics, techniques, procedures and mitigations employed by test participants in response to EW and EMI.
- Documenting and evaluating the effectiveness of the JGPSCE-developed GPS vulnerability test methodology.

JGPSCE test events produced significant data on the effects of GPS EW and EMI on systems and system-of-systems. JGPSCE provided data and feedback to the warfighter, acquisition, and test communities through a variety of products with sufficient detail to make them applicable to the respective system or program. Reports included five detailed test plans, four test event reports, seven vulnerability assessment reports, one investigation report, and a final test report. Other products include recommendations for Joint TTPs and Multi-Service TTPs, the GPS Vulnerability Test Methodology, the GPS Vulnerability Assessment Database, and the JGPSCE GPS data repository.

The JGPSCE team developed unique talents, capabilities, and testing expertise during the execution of this program. A DoD Selected Area Review on Navigation Warfare recommended an organization be established to ensure these capabilities are not lost. To capitalize on this recognized expertise, OUSD(NII) and STRATCOM committed to support the transition of the JGPSCE knowledge base to STRATCOM in FY06. OUSD(NII) took responsibility for supporting the JGPSCE transition effort in FY05.