

Joint Biological Agent Identification and Diagnostic System (JBAIDS)

Executive Summary

- Emerging results from IOT&E indicate Joint Biological Agent Identification and Diagnostic System (JBAIDS) meets sensitivity and specificity performance requirements.
- The system provides for timely information to medical and operational elements.
- JBAIDS is not operationally effective or suitable for shipboard use.



System

- The Services intend the JBAIDS to be a reusable, portable, biological agent identification and diagnostic system capable of identification of multiple biological agents simultaneously.
- JBAIDS is intended to satisfy a need to rapidly identify biological threat agents in clinical specimens and environmental samples, and interface with computer warning systems.
- It consists of an analytical device, sample preparation kits, reagent kits, laptop computer, and other support equipment.
- The total system with supporting equipment weighs approximately 1,500 pounds and measures 227 cubic feet.
- JBAIDS will be developed in three blocks:
 - Block I-modified commercial off-the-shelf (COTS) device intended to identify 10 biological warfare agents in 40 minutes.
 - Block II- adds capability to identify toxins.
 - Block III-reduced footprint and hand-held system. It is intended to receive Food and Drug Agency clearance as a diagnostic tool.

Mission

- Units equipped with JBAIDS can identify biological agents to support a commander's force protection decisions by providing timely information for determining appropriate treatment, effective preventive measures, prophylaxis, and operational decisions.
- JBAIDS is intended to be employed in units such as:
 - Army Medical Laboratory
 - Navy Environmental Preventive Medical Units, and aboard CVNs, LHDs, amphibious assault ships, and LCCs
 - Marine Corps Preventive Medicine units
 - Forward-Deployed or Forward-Positioned Biological Augmentation Team
- It provides enhanced capabilities to the warfighter against both conventional infectious organisms that occur naturally in the environment and biological weapons threats.
- It provides Services with confirmatory identification capability.

Activity

- The Air Force Operational Test and Evaluation Center, supported by the Army Test and Evaluation Command and Marine Corps Operational Test and Evaluation Activity, conducted the IOT&E at Brooks City Base, Texas, during May 2005. Sixteen matrices were spiked with 10 inactivated biological warfare agents. The Commander, Operational Test and Evaluation Force conducted an operational evaluation on USS *Blue Ridge* in Western Pacific Operation Area during May and June 2005.
- Developmental testing for live agent and inactivated agent sensitivity and specificity was conducted in FY05. Shelf life testing is ongoing.
- Testing was done in accordance with DOT&E-approved test plans.

Assessment

- Emerging results indicate JBAIDS can identify biological warfare agents in samples received from the Joint Biological Point Detection System or dry filter units, and for most clinical samples.
- Joint Task Force Commander indicated that rapid sample preparation and analyses using JBAIDS did provide for timely decisions regarding medical treatment and countermeasure decision-making.
- JBAIDS has suitability shortfalls:
 - The centrifuge is not suitable for shipboard use.
 - Reagent packaging is wasteful, inefficient, and costly.
 - Completion of information assurance testing for laptop computers is required.

DOD PROGRAMS

- JBAIDS system will provide capability to identify 10 Block I agents, but safety issues such as requirement for Biological Safety Level II and III facilities for analyses of some agents may preclude use by some forward-deployed laboratories.

Recommendations

1. JBAIDS footprint needs to be reduced. Extraction kit protocol utilizing large centrifuge needs to be revised to accommodate shipboard size and safety concerns.
2. Reagent kits need to be repackaged for greater efficiency and reduction in waste and cost.
3. Reagent kits should be optimized to improve limit of detection of JBAIDS instrument.
4. Provide process and inhibition controls to the JBAIDS Block 1 system to reduce incidence of false negative and false positive reporting.
5. Training should include guidance on preparation of samples using alternative protocols and to evaluate invalid machine calls.
6. Corrective actions from multi-Service operational test and evaluation and operational testing of revised sample preparation kits will require follow-on operational test and evaluation.