

Joint Biological Agent Identification and Diagnostic System (JBAIDS) – Block 1

The Joint Biological Agent Identification and Diagnostic System (JBAIDS) is operationally effective and suitable for ground-base operations. It is not operationally effective or suitable for shipboard operations. There are problems, which must be corrected, and additional testing is required to demonstrate that the corrective actions have been made. Here is a brief summary of each section of the report.

System Overview

JBAIDS is intended to be a reusable, portable, modifiable biological agent identification and diagnostic system capable of simultaneous reliable identification of multiple biological warfare agents and other biological agents of operational significance. Early identification of biological warfare agents will support field commanders' ability to make timely decisions regarding risk assessments, medical treatment, restriction of troop movements, and countermeasures. The system includes a Real-Time Polymerase Chain Reaction (RT-PCR) ruggedized machine and laptop with sample preparation kits, reagent kits, and support equipment.

Test Adequacy

Testing was adequate to support the evaluation of JBAIDS' operational effectiveness and suitability for ground-based units. Testing was not adequate for shipboard units; however, testing provided some data for evaluation purposes. This report is based on developmental and multi-Service operational test and evaluation (MOT&E) data.

The JBAIDS MOT&E was conducted in two concurrent phases. Phase I of MOT&E consisted of joint Air Force, Army, and Marines Corps operations from May 9 through May 19, 2005. The MOT&E was conducted in accordance with the DOT&E-approved Test Plan.

Phase II of MOT&E, conducted aboard ship, was not adequate because the Beckman Allegra X-22 centrifuge was not certified for shipboard use by the Navy, no air, water, blood, buffer, or food samples could be processed. No RNA virus samples were processed during Phase II.

Operational Effectiveness

JBAIDS is operationally effective for ground-based units; it is not operationally effective for shipboard use. Timely identification of an agent (3-4 hours versus 24-48 hours from traditional culturing methods) aids in improved situational awareness, isolation of personnel, and reduced exposure to the agent.

Operational Suitability

JBAIDS is operationally suitable for ground-based units. It is reliable, and easy for operators to use and maintain. It is not suitable for shipboard operations because the centrifuge necessary for sample preparation was not certified by the Navy because of safety concerns. For both ground-based and shipboard operations, some operational suitability issues merit attention such as the large footprint for small expeditionary units, information assurance, and electromagnetic interference.

Recommendations

DOT&E recommends additional testing to confirm JBAIDS operational effectiveness and suitability that may result from implementing the recommendations below.

The Joint Program Executive Officer for Chemical Biological Defense the Service user community should consider the following recommendations:

Operational Effectiveness

To improve operational effectiveness:

1. Replace the sample preparation kit that requires the large centrifuge with an alternative protocol and conduct operational testing to confirm its operational effectiveness.
2. Complete additional testing to better bound the system's capabilities of the agents where the results in developmental testing and operational testing differ.
3. Perform additional testing of the powder samples where there may have been some sample spiking issues during MOT&E.

ANNEX - BLRIP EXECUTIVE SUMMARIES

4. Optimize the sensitivity of the reagent kits to provide for identification of threats at levels closer to infectious levels.
5. Investigate possible operational implications of the agents and matrices that resulted in a larger number of false positives.
6. Add process and inhibition controls to the JBAIDS Block I system to reduce the incidence of false negative and false positive reporting by JBAIDS laboratories.

Operational Suitability

To improve operational suitability:

1. Perform a study to determine if there is a more cost effective solution than the current JBAIDS reagent kits.
2. Provide additional shelf-life testing to characterize the longevity of the JBAIDS consumables and upgrade the refrigerator capacity to include space for reagent kits to be maintained at proper temperature for the deployed location.
3. Investigate bio-safety level containment and make appropriate changes to Tactics, Techniques, and Procedures and Doctrine to provide for increased protection of military operators.
4. Bring the JBAIDS laptop into compliance with existing DoD directives.
5. Complete additional electromagnetic interference testing to resolve the potential impact on operations.
6. Improve training by including a checklist for each protocol to make sure all steps were completed. Guidance should be provided on what to do when presented with environmental or clinical samples for which they were not trained or when presented with smaller sample volumes than those indicated in the protocols.
7. Ensure the JBAIDS Concept of Operations and military doctrine address the impact of results reported from JBAIDS laboratories on consequence management as a result of presumptive, confirmatory, and definitive identification.