

LESSONS LEARNED FROM U.S. DEPARTMENT OF DEFENSE 911-BIO ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS

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SUMMARY

The U.S. Department of Defense (DoD), in cooperation with other federal agencies, has taken many initiatives to improve its ability to support civilian response to a domestic biological terrorism incident. This paper discusses one initiative, the 911-Bio Advanced Concept Technology Demonstrations (ACTDs), conducted by the Office of the Secretary of Defense during 1997 to better understand:

- The capability of newly developed chemical and biological collection and identification technologies in a field environment.
- The ability of specialized DoD response teams to use these new technologies within the structure of cooperating DoD and civilian consequence management organizations.
- The adequacy of current modeling tools for predicting the dispersal of biological hazards.

This paper discusses the experience of the ACTDs from the civilian community support perspective. The 911-Bio ACTD project provided a valuable opportunity for DoD and civilian officials to learn how they should use their combined capabilities to manage the aftermath of a domestic biological terrorism incident.

I. BACKGROUND

The Defense Authorization Act for Fiscal Year 1997 directs the U.S. Department of Defense (DoD) to improve its ability to support civilian

authorities responsible for responding to domestic biological terrorism. Specifically, Congress directed the Secretary of Defense to develop and maintain the capability to respond quickly to acts of domestic terrorism and provide the capability to aid federal, state, and local officials in detecting, neutralizing, containing, dismantling, and disposing of weapons of mass destruction (WMD) that contain chemical, biological, or related materials (Public Law 104-201, Section 1414(a)).

The proliferation of WMD, particularly biological warfare (BW) agents, threatens U.S. interests and personnel worldwide. In response to this proliferation of acts of terrorism, which include the Tokyo subway sarin gas attack and the bombings of the World Trade Center and Oklahoma City Federal Building, President Clinton signed Presidential Decision Directive 39 (PDD-39), which addresses how the United States should deal with the prospect of a terrorist use of WMD. The presidential directive divides the U.S. response to the threat of terrorist WMD use into two distinct categories: crisis response and consequence management.

Crisis response refers to instances where the perpetrators have been discovered before an actual WMD release. Domestic crisis response is the responsibility of the Federal Bureau of Investigation (FBI). Consequence management, by contrast, describes ways and means to alleviate the short- and long-term physical, socioeconomic,

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and psychological effects of a chemical, radiological, or biological attack. Domestic consequence management of WMD attacks is the responsibility of the Federal Emergency Management Agency (FEMA).

II. ADVANCED CONCEPT TECHNOLOGY DEMONSTRATION

In January 1997 the Consequence Management Advanced Concept Technology Demonstration (ACTD) was proposed to help define and establish the capability needed to rapidly transition from crisis response to consequence management with early detection and identification of BW agents and proper care and treatment of victims. With its focus on terrorist use of BW agents, this consequence management ACTD was given the name "911-Bio."

The Office of the Deputy to the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, Counterproliferation and Chemical/Biological Defense conducted two 911-Bio ACTDs at Dugway Proving Ground (DPG), Utah. The preliminary ACTD took place on June 3 and 4, 1997; the final 911-Bio ACTD was conducted on December 5 and 6, 1997.

A. Purpose

The purpose of the 911-Bio ACTD was to enhance worldwide military capability to respond effectively to the use of biological weapons by demonstrating:

- Key WMD consequence management technologies in a field environment and

validate, research, development, and acquisition priorities.

- Operational concepts for the U.S. Army's Technical Escort Unit (TEU) and the U.S. Marines' Chemical Biological Incident Response Force (CBIRF).
- The ability of DoD units to interact with other government agencies.

B. Methodology

Argonne National Laboratory possesses more than 20 years of experience in emergency preparedness. Much of Argonne's capabilities are focused in the civilian arena. Recognizing this, DoD requested Argonne's assistance in the proposed ACTDs with the following primary functions:

- Develop a Simulation Cell (SIMCELL) that would inject into the ACTD, actual/real-time communications requesting DoD support, responding with actions that would be taken by civil authorities in response to the scenario events.
- Collect information about the DoD interfaces with these agencies.
- Make recommendations based on the analysis of the data collected.

Argonne established the ACTD SIMCELL to represent federal, state, and local consequence management officials who could request and receive DoD support in the event of a domestic biological terrorism incident (Figure 1).

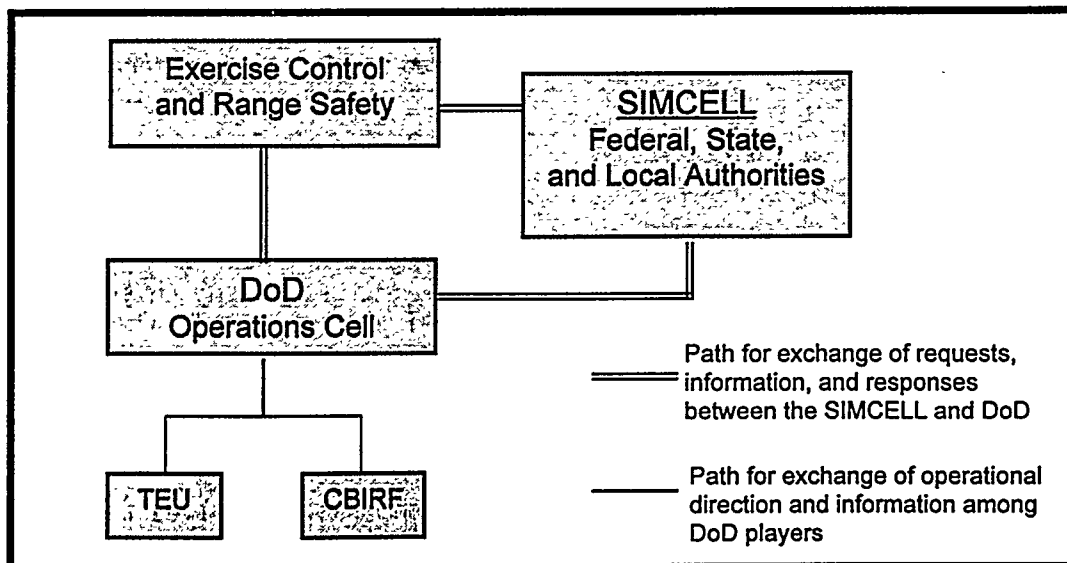


Figure 1. Relationship of SIMCELL to DoD and other demonstration cells.

The operational structure of the SIMCELL was designed to represent a Joint Operations Center (JOC) led by the FBI. The JOC included a consequence management element led by FEMA.

A number of federal agencies, state offices, and local offices were represented in the JOC. For the preliminary ACTD in June 1997, Argonne personnel played the roles of all civilian officials represented. For the second ACTD, the SIMCELL staff included officials from the FBI, FEMA, the State of Utah, Salt Lake City, Salt Lake and Tooele Counties, and a liaison officer from the U.S. Fifth Army Response Task Force, with Argonne staff playing the roles of other civilian officials. The SIMCELL also simulated the effects of events on private and public institutions (e.g., hospitals, the media, businesses, and other critical infrastructure organizations and facilities) by role playing within the SIMCELL staff. This was only to the limited extent that the role playing related directly to the objectives defined for the ACTD.

A second cell -- the DoD operations cell -- represented the command and operations structure the military would establish to support field operations.

III. RESULTS

The information requests and interchanges between the civilian officials in the simulated JOC and the DoD response units were carefully collected and analyzed. They included the communications exchanged within the SIMCELL and between the SIMCELL and the DoD operations cell during the Final Demonstration. These data were supplemented by information obtained from questionnaires completed by, and informal interviews with, the SIMCELL staff.

A. Communications Analysis

The communications exchanged between the SIMCELL and the DoD operations cell during the two days of demonstrations were analyzed to identify the priorities and concerns of each cell and to evaluate the extent to which each was responsive to the other. In total, 199 communication exchanges between the SIMCELL and the DoD operations were captured and analyzed. An individual communication exchange consisted of as many contacts as necessary to complete a transaction (i.e., pass the information, ask the question, make the request, or provide the response). Captured communications were

analyzed and found to fall into five general categories. Table 1 identifies the overall percentage of communications associated with each of the general categories.

Table 1. Communications Categories

<u>Category</u>	<u>Percentage</u>
Agent sampling	16
Plume concentrations & projections	09
Protective actions, health & safety	20
Scene, suspect, operational issues	50
Ambulance & paramedics	05

Argonne's analyses also revealed a close correlation between questions asked and answers provided between both the civilian authorities and the DoD operations cell. However, some significant delays occurred in a few of the DoD responses to information requested by the civilian authorities. This gave the disproportionate appearance that DoD was not being responsive to civilian information needs. As indicated in Table 1 above, 50% of the communications exchanges between the SIMCELL and the DoD operations cell dealt with the scene, suspects, and operational issues related to the scenario.

B. SIMCELL Staff Interviews

In addition to collecting communications between the SIMCELL and the DoD Operations Cell during the ACTDs, Argonne conducted post-ACTD interviews with the SIMCELL staff and circulated questionnaires. The discussions within the SIMCELL and the results of the questionnaires and interviews following the final demonstration indicated that the concerns of the SIMCELL staff went beyond the use of the new technologies. Great interest was shown in the larger challenge of responding to a biological terrorism incident without any prior intelligence warnings or advance readiness preparations. The subjects mentioned most often in discussions, questionnaires, and interviews are listed below:

- Concepts of operations of the military responders and their command control elements, and how these concepts will fit with the concepts of operations of state and local first responders.
- The use of the Incident Command System (ICS) and communications between DoD responders and civilian first responders.

- Interagency cooperation at the federal level, especially communications between DoD responders and the Lead Federal Agency (LFA).
- Staffing of the DoD command element, as represented by the DoD operations cell.
- Opportunities for civilian first responders to train with DoD responders and to acquire the new technologies for their own use.
- Quality and timeliness of hazard analysis information and its application to protective action decision-making.
- Proficiency training for DoD responders.
- Limitations of the new technologies.
- Availability of DoD assistance for unexpected events.

IV. LESSONS LEARNED

In general, civilian officials demonstrated how they would use DoD assets, specifically the TEU and CBIRF capabilities, to help them manage the aftermath from a domestic biological terrorism incident. They also learned how these units and the DoD chain of command could assist them, as well as state and local first responders. Other specific lessons learned include:

- DoD responders understood their role in supporting the LFA and other civil authorities.
- Relationships among DoD organizations to support the LFA were not well defined.
- DoD command elements and organizations did not have integrated plans nor concepts of operations.
- DoD response interfaces were not aligned with the ICS.
- Hazard analysis products, chiefly plume projections, did not support civilian decision-making.
- The DoD operations cell could not adequately track events, requests, and commitments that involved civilian officials.

V. RECOMMENDATIONS

The ACTD clearly enabled users to learn about the new technologies. As value added, the assessment of the data collected from the SIMCELL perspective led to the following recommendations for improving DoD support to civilian officials who manage the consequences of a domestic biological terrorism incident:

- DoD command elements, the TEU, and the CBIRF should continue to develop integrated

Concept of Operations and plans to provide consequence management support to civilian authorities.

- Integrating state and local responders into DoD biological collection, detection, and identification operations should be considered.
- The DoD, in consultation with civilian technical representatives, should develop the capability to provide timely, relevant (i.e., responsive and useful), and comprehensive hazard analyses products to support the civilian protective action decision-making process.
- A centralized national capability should be established for biological hazard plotting and analysis to expedite delivery of these services.
- DoD organizations that support civilian officials should incorporate an electronic information management system into their operation.
- Arrangements should be made to dispatch military detection and identification elements expeditiously, in advance of the deployment of the main body of DoD biological incident responders.
- The TEU and CBIRF should conduct regular, basic training in biological incident response jointly with their immediate command elements.
- A regular schedule of tabletop and full-scale field exercises of DoD and civilian capability to help manage the consequences of domestic biological terrorism should be established.

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