

Biological Warfare War Game “BIO 98-1”

Executive Summary

1. **Interagency Relationships**. The Nunn-Lugar legislation did not clearly resolve the military portion of the Chem-Bio consequence management equation. There are still unresolved issues regarding who is in charge that need to be resolved between DOMS and USACOM. CBIRF will respond to any agency placed in overall control, but a clarification of command relationships would be helpful.

a. Players generally agreed that CBIRF'S role as facilitator for interagency and local training remains critical in the long term.

b. As National Guard Response Teams become operational and experienced, we may well be able to transition the CBIRF to other roles. One player described its value so far as, "the grain of sand in an oyster".

c. The DOD contribution to the effort appears to be a menu of options ranging from CBIRF and National Guard assets to DSWA modeling and simulation support. However, the menu with which first responders, state, and local officials can order off that menu is currently disjointed and ad hoc.

2. **Reachback Capability**. The reachback capability is a powerful tool, but we need to learn how to employ it to its full capacity. It currently exists on two levels, (1) tactical/technical support and (2) strategic/operational support. The strategic/operational piece is not currently being used to full capacity. Dr. Lederberg and Mr. Joseph made several excellent suggestions for improving our use of this capability. We are just beginning to see the role of the virtual staff.

a. The capability of all government agencies to utilize CBIRF and virtual staff reachback is problematical. There is no central information clearinghouse at this time. The system is ad hoc and personality based; consequently, it is prone to breakdowns as personnel changes occur.

b. Federal regulations prohibit DSWA from easily downloading models to first responders.

3. **Future Actions**. MCWL will sponsor a series of war games exploratory interagency games with the following objectives:

a. Examine alternative candidate communications models for sharing information, models, and expertise in a more rapid and expeditious manner.

b. Explore options for making local and state agencies aware of the potential for CBIRF training support.

c. Examine a number of difficult issues using our reachback expertise. These issues include:

- (1) Triage policy
- (2) Interagency relationships
- (3) Communications infrastructure
- (4) Quarantine policy
- (5) Logistics issues
- (6) Policy for distribution of antibiotics
- (7) Assignment of the right organizations to the right missions

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Assessment Report

I. Background. On 19 September, the Marine Corps Warfighting Lab conducted a one-day urban warfare exercise at The Citadel in Charleston, South Carolina. Would-be terrorists (British, Dutch and US Marines) occupied McAlister Field House during the night. Around noon, about 300 U.S. and Royal Marines conducted a mock assault. One objective is to determine how to control from a distance or at sea. A second objective is to see how well the Marines’ special unit, the Chemical Biological Incident Response Force (CBIRF), works in an urban environment. CBIRF is prepared to respond to military and domestic situations and to fight terrorists who might have biological devices. In this scenario, they will find the supposed biological device, recover it, and neutralize any manufacturing capability they may find.

Related to that event, on 17 September a wargame was conducted at the Defense Special Weapons Agency (DSWA). DSWA is familiar with CBIRF, has developed models of the consequences of biologic agents, and works together with the Marines on the Reachback ‘virtual staff’ of national experts, who are available on-call in a crisis.

II. Concept. The game utilized the Charleston scenario as a point of departure. The 23 participants simulated a Joint Interagency Consequence Management Task Force (JICMTF), including representatives from CBIRF, the Reachback ‘virtual staff’ and the ‘first responder’ community (firefighters and emergency medical personnel).

III. Scenario. At midnight on 18 October 1998, a police cruiser investigates unusual activity at a petrochemical plant on the outskirts of Charleston, SC. The police are taken under heavy fire. By 0200, 100 police are engaged against a dozen or more terrorists. Police alert the fire department, which arrives on scene as the ‘first responders’ in the event of a fire or release of a hazardous agent. By 0230, both the FBI and the South Carolina Emergency Preparedness Division alert the governor, the Federal Emergency Management Agency (FEMA) and the Director of Military Support (DOMS). The latter alerts the Pentagon Command Center, which calls the SecDef and the Chairman of the JCS by 0300. DOMS also alerts CBIRF and other units, such as the Technical Escort Units (TEU) and Chem-Bio Defense Command (CBDCOM) special units. At 0550, the terrorists claim to possess a biological ‘bomb’. At 0600, a series of explosions rock the plant, which is engulfed in flames. The terrorists are all presumed killed and the main effort falls to the firefighters, to put out the fires, to locate the biological devices, and to direct the evacuation of the area. The first firefighters into the building report several large open canisters with a whitish powder. The wind is blowing at 15 knots toward the city, with major population centers about one to two kilometers away.

III. Three-fold Objectives. The game addressed three distinct but related items. If such biological terrorism occurs inside CONUS, what are the roles for CBIRF, the Reachback ‘virtual staff’ and the DSWA models? Are these roles determined on an ad hoc, opportunistic basis as an

incident arises, or should they be codified and institutionalized as part of Standard Operating Procedures?

1. The roles of the Chemical-Biological Incident Response Force in a domestic incident. The Marines have the CBIRF unit located at Camp LeJeune, North Carolina, less than 250 miles from Charleston. Among other duties, CBIRF is trained to ‘turn casualties into patients’. They arrive at the scene of an incident, establish security, assist in restoring order, evacuating casualties, offering immediate first aid and decontaminating efforts and, if appropriate, securing any hazardous devices. CBIRF has the expert training and organization to also give advice and direction to other responding units. As a military unit, CBIRF is focused on training for events that relate to Marine missions overseas. However, it is obvious that the skills and discipline of CBIRF may offer capabilities that would be important in certain large-scale domestic incidents.

2. Reachback to National Experts. The Marines were also responsible for initiating a ‘virtual staff’ – the concept of ‘reaching back’ via the telephone, modem, pager, etc. to medical and scientific experts. This ‘virtual staff’ has been expanded and refined by the Defense Special Weapons Agency.

3. DSWA Models. DSWA has both detailed electronic maps of urban areas and models that predict the geographic footprint and degree of lethality of various agents.

IV. Results from the Game. These are divided into five sections: General, CBIRF Roles, Roles for Reachback ‘Virtual Staff’, Roles for DSWA Consequence Prediction Models and Recommendations.

A. General.

1. The Time Frame/Condition of the incident will determine the degree of assistance and value CBIRF, the ‘virtual staff’ and the DSWA models can render. There seems to be four distinct timeframes/conditions related to response to a chem/bio event. The roles and relative worth of CBIRF, Reachback ‘virtual staff’ and DSWA models were found by the participants to change from one timeframe/condition to another. Table 1 shows the results of a poll of relative worth by the game participants. The four timeframe/conditions looked at are shown below:

- 1) The US has more than 24 hours warning of a biologic or chemical attack.
- 2) There is no warning, but the type of substance, the approximate amount and its release are quickly known and the parameters of the affected area can be set.
- 3) When the release is known only by the gradual influx days later of casualties, while the parameters of the problem and geographic boundaries are pieced together over the same period.
- 4) Unknown release with the parameters of the problem remaining unknown and/or the problem/attack is recurring.

Value of Assistance by: (answers in %)									
Time Frame/Condition	CBIRF			Reachback			DSWA Models		
	high	med	low	high	med	low	high	med	low
1. >24 hours warning of the release of a known type of agent	70	20	10	50	35	10	55	30	10
2. No warning; release, type agent & amount immediately known	25	30	45	60	15	25	70	20	35
3. Release known by casualties over days; parameters defined	15	25	60	65	25	10	45	25	25
4. Release known by casualties; parameters undefined or events recur	20	30	45	65	30	5	40	30	30

Table 1. Evaluating Worth of Defense Assistance (high, med, low) vs. Time Frame

Note that CBIRF's value was rated highest when there was time to preposition the force on-scene. CBIRF needs up to six hours after first alert before the initial response unit is out the gate; e.g., the event occurs at 3AM on a Saturday morning, instead of during duty hours, necessitating a recall, etc. Then there is the travel time to the scene, which can add another six hours.

On the other hand, the highest value of the virtual staff of national experts seems to be in the case where the parameters of the agent are undefined, requiring forensic and epidemiological expertise and detective work.

Finally, models are most useful when the type and amount of agent are immediately known and the first responders need a rough estimate of the geographic area to be evacuated.

2. Discovery Learning requires Reachback connections. The most likely incident will be characterized by "discovery learning"; those on-scene will not know the type or extent of the incident until they begin to respond to the emergency. Hence as they address unknowns, they will want to be in touch with those with knowledge and expertise, not with bureaucrats who will act as filters and pass their queries on to the real experts.

3. Command & Control Croquet. While we live in an age of immediate information, those who need help immediately must wait while a tortuous stovepipe Federal chain of command chugs along. In a tribute to bureaucratic survivalists, the ability of a fire chief on-scene to communicate with CBIRF, Reachback or DSWA models is blocked. While it would be simple to construct, there is no Internet means for those with a real immediate problem to alert or consult with those who exist to help. The US Government insists on a step-by-step process up a convoluted chain of command and then down the other side. This is the alerting system of the 1940s; all it requires is a telephone – and patience. Once one has gone through all the bureaucratic wickets, CBIRF or the Reachback 'virtual staff' will be allowed to communicate with the first responders on-scene.

The formal chain of command to contact CBIRF, the Reachback 'virtual staff', or DSWA for model support has developed along legal and bureaucratic lines. This chain most often proves to be a hindrance rather than a help. The first responders at the game pointed out that they keep address books with the phone numbers of those they want to contact on an ad hoc basis, short-circuiting the formal chain of command. They said they looked forward to the exercises with CBIRF because during the training and exercises they would make the informal contacts and obtain the phone numbers they needed.

B. CBIRF Roles. This game was a deliberate suboptimization of a much broader effort. We were well aware that there are dozens of games and exercises being conducted throughout government. The Army Chemical-Biological Defense Command (CBDCOM) has response teams. The Army also has Technical Escort Units (TEU) for the speedy removal of hazardous devices. New York City and many other cities have hazardous response teams which are in operation every day. Every major hospital has emergency response recall lists. The Center for Disease Control (CDC) has teams it dispatches in emergencies. In accord with the Nunn-Lugar Bill, tens of millions of dollars are being spent to train and stand up National Guard RAID (Respond, Assess, Identify) teams to

bring in aid and to direct others on-scene. RAID in 1999 may be in place in 15 cities, and in 35 more by 2001.

That having been said, CBIRF exists; it is not a paper or a future capability.

1. Once advertised, CBIRF will be requested by all first responders. At the game were two battalion fire chiefs from New York City who are in charge of hazardous response teams and all search & rescue. They have over 200 firefighters trained and equipped to respond to chemical incidents. *No other US city approaches this level of preparedness.* Yet the chiefs were anxious to train with CBIRF, because CBIRF is the first federal unit they want on-scene.

Why? Because they pointed out that CBIRF brings assets (well over 200 trained Marines) and will pitch in immediately. The New York Fire Chiefs said they had never dealt with a large-scale deliberate attack by a chemical or biological agent. If they ever do, they are not going to wait and see if they can handle it or if more devices are going to turn up; they are going to request CBIRF as fast as the chain of command allows them to do so. As far as they were concerned, it was not conceivable that any other city or locality would not do the same. They said while CBIRF might not arrive as instantly as they would want, that did not mean they weren't going to ask them to get there as soon as possible. In their view, as the federal program of chem-bio gradually reaches to the cities, the awareness of the existence of CBIRF will lead to more requests. They said they were aware the National Guard had a program to have a smaller team on-hand in many cities. Nonetheless, they said they would still ask for the Marines to come as fast as possible.

2. Push vs. Pull Activation. Military forces such as CBIRF are activated up the chain of command through the local to state to federal emergency chains. Which federal agency notifies Defense officials depends upon whether it is the Crisis Management of an incident related to a criminal event or Consequence Management (rescue and casualty mitigation effort). Ultimately, the incident is referred to the SecDef (domestic employment of military forces) through the OSD or DOMS staff. When there is a credible threat, there may be a decision to go ahead and alert CBIRF through DOMS.

Information transfer can go direct anywhere without restriction; the employment of military forces requires formal activation. However, there is no network centric horizontal communication net among agencies for the rapid dissemination and sharing of information about a chemical or biological incident. Once the National Response Center gets a call through the toll free Coast Guard emergency number, the Center will automatically notify the FBI and other federal emergency response/consequence management agencies. But virtually all calls for military assistance come from the FBI or state agencies via FEMA, and not from local authorities on-scene. This is a matter of current rules and regulations on the use of federal military forces in domestic situations. There are a number of informal arrangements that are a result of personal contacts and exercise familiarity; without frequent exercising these informal ad hoc arrangements cannot remain current.

Currently, there is no way a first-responder organization on-scene could initiate a 'pull' request to activate CBIRF, as distinct from the 'push' process of proceeding serially from first responder to

state emergency operations center to federal agency to governor to federal agency to military agency to SecDef to CINC to senior Marine command to CBIRF.

3. Timeliness of Arrival. Prepositioning is obviously optimum for CBIRF to truly be effective in response to an incident. Early alerts permit CBIRF to begin tracking and preparing for possible deployment, but is dependent upon good intelligence and a prompt decision to deploy. There has been a time lag in establishing an integrated effort within the federal emergency agencies to develop an immediate response capability. There appeared among the participants severe doubt as to the level of understanding at the local level of what the first responders are facing and what agencies are available – specifically CBIRF. Chances are that few will think to alert the CBIRF promptly let alone request timely deployment through the chain.

Usefulness on-scene occurs as soon as the agent/vector is noted to be present. First-responders play catch-up from that point on. Optimum conditions are 4-5 hours from moment of activation until CBIRF is on-scene to help. CBIRF is not the right agency to call for information and expert advice.

4. Transitory or Enduring Role? It is unlikely that there will be a comprehensive response that will make the CBIRF either redundant or less useful in the near future. There are a number of parallel agencies but none are emerging as equally professional and capable as Marine Corps Chemical Biological Incident Response Force. There is also some doubt that these emerging organizations will have equal expertise in response to biological threats.

Looking out several years, the enduring role may change from response to R&D facilitation, training of other federal units and exercising with the local and state agencies. Over the past two years, CBIRF has constituted the sand in the oyster that has prodded other agencies to develop plans and capabilities.

There is no inherent reason why the Marines, as distinct from any other service, should have taken it upon themselves, with no external funding, to develop CBIRF. However, General Krulak, Commandant of the Marine Corps believed there was a gap in federal capabilities and moved to fill it. Allegedly, he thought of it as being a catalyst for other agencies to develop their own capabilities. He stated, “There is a need for an organization – manned, trained and equipped to counter the growing biological/chemical terrorist threat. The Marine Corps will have such an organization...”.[Commandant’s Planning Guidance July 1, 1995] Aided by funding made available from the Nunn-Lugar Bill, other agencies are moving to develop this capability internally. There is an on-going effort to inventory the national response capabilities, as a result of this inventory the role of CBIRF may change.

Even if and when the CBIRF is no longer needed inside CONUS, there remains considerable need to respond to threats to US forces outside of CONUS.

C. Roles for Reachback ‘Virtual Staff’. The original reachback concept of several years ago was to solicit the judgments of distinguished doctors and scientists in real time, as the Marines

encountered a chemical or biologic device. Through video links as well as telephone, the experts would act as a 'virtual staff'; that is, they would be at the corporal's elbow to guide him.

If one stands back from that concept, it is apparent there are four possible expert staffs with two separate missions – 'Tier I.' policy advice (not on-scene with the corporal) or 'Tier II.' operational/clinical advice (on-scene with the corporal). (If it is neither type of advice, but rather consultations with doctors and pathologists, it may not be a function for the Marine Corps, which relies on the Navy for its medical staff.) The four possible expert staffs are:

1. An ad hoc or standing collection of national experts on call to consult via the internet or the telephone; this is the Reachback 'virtual staff' under discussion in this game.
2. National expert staffs at institutions, such as CDC, with established procedures and chains of command.
3. Local ad hoc experts (doctors and first responders at the scene of the incident)
4. Local expert staffs (hospitals near the scene of the incident)

1. Value of Reachback 'virtual staff' of national experts in an operational crisis is limited.

The 'virtual staff' does not give clinical or operational advice; they do know whom to call for such advice. However, there is no one aggregate list of experts available to first responders nationwide. Each city or locale develops its own.

The existence of the 'virtual staff', initiated and funded by General Krulak, has gradually led to a more organized interaction among experts at a policy level, bringing together the domestic public health experts with those who have expertise in the international issues and military threats. There needs to be a better entry point or directory system for expertise. Currently there is no national-level panel that replaces the current CBIRF panel.

On the other hand, the CBIRF Reachback 'virtual staff' has raised the level of national awareness concerning the potential consequences of an incident and has been of aid at the SecDef level in the development of doctrine and pre-incident public policy. Such experts appear more valuable as a source of policy advice than as experts who can give advice directly to the corporal on-scene at a serious incident.

2. Communications mechanics of reachback to the Virtual Staff of National Experts.

Currently, the telephone and pagers are the reachback mechanism. Obviously, a Web chat room type page should emerge as the backbone. At substantial expense, DSWA is installing Internet technology to transmit video and audio as needed, as well as a server for an Internet connection that potentially could connect the experts with the first responders. DSWA has SIPRNET interconnectivity as well. DSWA could be the hub of the chem/bio network for providing a library of data and a means of informally permitting the experts to come together in a crisis.

3. Government agency cognizance over national chem/bio experts is confused. The FBI has federal cognizance over crisis management that normally will occur before the consequence

management phase, conducted under the cognizance of FEMA, which in turn delegates the management to the Public Health Service. The Attorney General has coordinating responsibility for the transfer of cognizance from the FBI to FEMA but no direct control over the experts. There does not appear to be a single government agency with overall cognizance to coordinate different groups of experts used by different agencies.

Currently, the Marine CBIRF has the names and phone numbers of the experts on its Reachback 'virtual staff'. CBIRF can reach out and 'touch' an expert. It is not clear the FBI or FEMA can 'touch' the same Reachback staff; each agency may have a different virtual staff of its own for chem-bio. It is unlikely the 'virtual staff' will be readily available and able to provide advice in real time in an operational crisis.

DSWA seems very interested in continuing with the consultation and administrative costs of the Reachback 'virtual staff'. It may be the time has come to transition the Reachback 'virtual staff' to DSWA.

D. Roles for DSWA Consequence Prediction Models.

1. DSWA hazard consequence-prediction models exist; but they cannot be distributed directly to domestic first responders. DSWA has developed over the past ten years a set of predictive models which project the geographic casualty-producing paths of chemical and biologic agents. Of course, one must know several parameters, including wind direction and speed, local weather conditions, the type and amount of the agent, etc. DSWA provides these models inside federal government channels. However, to distribute them to domestic first-responders would place DSWA in competition with commercial vendors of similar models.

So there is a disconnect. Currently, if a domestic first-responder wants a rough-cut of the geographic pattern of an agent, they must call DSWA and provide the data. DSWA will then run the models and provide the results to the requesting agency- local, state or federal.

2. Accuracy of models is in doubt, but they may be better than nothing. None of the cloud models are accurate in an urban environment and all are based on chemical and nuclear weapon effects research and modeling. If a real event occurred, it is problematic how much empirical data and evidence the first responders could gather to feed into the model. However, the belief of the first responders at the game was that the existing models were better than nothing.

E. Recommendations.

1. Streamline the process whereby CBIRF and related military units with time-critical capabilities arrive on-scene. The current process is cumbersome and time consuming. Modern communications are being forced to follow bureaucratic stovepipe procedures which seem either to place institutional prerogatives above mission accomplishment or to protect outmoded bureaucratic structures.

2. Provide an information process which permits first responders and Reachback ‘virtual staff’ experts and DSWA modelers to communicate swiftly and fully. Currently, there is no approved server, no chat room, and no common Internet connection to facilitate rapid research and the exchange of information among those with a need-to-know when a chem-bio incident occurs.

3. CBIRF in its domestic contingency mode is a national, not a Marine, resource; it should be funded as such. At the game, every first responder wanted CBIRF in the event of an incident. The reason was self-evident: CBIRF is a trained, disciplined force that will perform assigned tasks alongside the first responders. CBIRF acts, not advises.

4. It is too early to rely upon follow-on’s to CBIRF. Continue to support CBIRF with chartered capabilities for the near term until a replacement organization assumes the mission and has existing, proven capabilities.

5. Change the federal regulations that prohibit DSWA from downloading models to first responders to run on their own.

6. Conduct series of seminar wargames and exercises that use a variety of scenarios. The scenario for the game was criticized as being too restrictive. Upon reflection, the participants changed the critique to observe that any single scenario will be too restrictive, because the conditions of the chem-bio incident are highly variable. Therefore to test the soundness of plans and information flows, a variety of scenarios must be played. Also included must be multiple, concurrent response events in future scenarios to determine if as a nation we have an effective response capability to more than one incident at a time.

7. Include the National Fire Academy in future games since it is the national training facility for the primary first response team.