

UNITED STATES ARMY CHEMICAL BIOLOGICAL RADIOLOGICAL AND  
NUCLEAR CORPS CAPABILITY FOR COMBATING THE CONTEMPORARY  
WEAPONS OF MASS DESTRUCTION THREAT

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by

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## ABSTRACT

UNITED STATES ARMY CHEMICAL BIOLOGICAL RADIOLOGICAL AND NUCLEAR CORPS CAPABILITY FOR COMBATING THE CONTEMPORARY WEAPONS OF MASS DESTRUCTION THREAT, by MAJ Matthew Kelly, 85 pages.

The threat of a Weapons of Mass Destruction (WMD) attack against the United States is more significant than ever. The United States Army Chemical, Biological, Radiological and Nuclear (CBRN) corps is designed to deal with the results of this attack; however the focus of the CBRN corps has shifted from the passive defense (reactive) posture to the active defense (proactive) posture. A key mission in the conduct of active CBRN defense is the WMD elimination mission. This study examines the United States Army CBRN corps doctrine, organization, and material in order to conduct the WMD elimination mission.

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## ACRONYMS

CBRN	Chemical, Biological, Radiological, and Nuclear
CBRNE	Chemical, Biological, Radiological, Nuclear and High Yield Explosives
CRT	Chemical, Biological, Radiological, Nuclear and High Yield Explosive Response Team
DOTMLPF	Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities
MTOE	Modified Table of Organization and Equipment
RCP	United States Chemical, Biological, Radiological and Nuclear Corps Regimental Campaign Plan
SFCRD	Special Forces Chemical, Biological, Radiological and Nuclear Reconnaissance Detachment
USACBRNS	United States Army Chemical, Biological, Radiological and Nuclear School
WMD	Weapons of Mass Destruction

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## CHAPTER 1

### INTRODUCTION

When discussing the international Weapons of Mass Destruction (WMD) threat, one must think of the catastrophic nature of a WMD attack on a major population center within the United States. This attack would kill tens of thousands of people and potentially injure hundreds of thousands more. The attack could contaminate large portions of the population center making that portion of land unusable for long periods of time. The psychological effect of this attack would be felt throughout the nation, and the attack would lead the American people to ask not “When will the next attack occur?” but “Where will the next attack occur?” While the threat of an individual nation utilizing WMD against the United States mainland exists it is mitigated through a series of international treaties, for example the Biological Weapons Convention of 1972 or 1997 Chemical Weapons Convention, and agreements limiting it’s use and rendering stiff penalties to a nation who decides to violate it. However, many terrorist organizations throughout the world have attempted to obtain WMD material in order to gain further legitimacy and political power on the world stage. These organizations do not adhere to the international laws governing the use of WMD, and could use these types of weapons if it would gain them credibility to further their cause.

These attacks, while catastrophic, can be prevented through the efforts of the international community, United States government, and the United States military. The United States government publishes multiple strategies, which outline the need to prevent the use of WMD. The whole of government approach is essential to the success of these operations, it is the military that will conduct specific operations to prevent the use of

WMD against the United States and its allies. The United States Military has many units which assist in the conduct of counter WMD operations, the research contained in this document will focus on the United States Army Chemical, Biological, Radiological, and Nuclear (CBRN) corps, and specifically examining the CBRN corps ability to conduct WMD elimination operations.

Originally established to defend against the German gas attacks of the Great War, the United States Army CBRN Corps finds itself at the forefront of the War against Terrorism. Throughout the history of the United States Army CBRN Corps, the mission to defend against one of the great threats on the battlefield has been a corner stone of the United States CBRN Corps existence. Today, we find ourselves in an era where state and non-state actors alike possess the ability to utilize weapons of this nature and the readiness of the CBRN corps is a chief concern to the security of the nation.

The first recorded use of chemical warfare during modern warfare occurred in April 1915 in Ypres, Belgium when German forces successfully launched a chlorine gas attack against French forces entrenched there. The gas warfare was primarily as a method to defeat a heavily entrenched enemy, this method proved successful and gas warfare was used throughout World War I with catastrophic results. Approximately 88,000 gas casualties proved to be fatal with an estimated 1.2 million proving to be non-fatal casualties.<sup>1</sup> In June 1918, the American Expeditionary Force, recognizing that the use of gas warfare posed a significant threat to military forces and that gas weapons would likely be utilized during future conflict, established the Chemical Warfare Service.

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<sup>1</sup>Michael Duffy, "Weapons at War-Poison Gas," <http://www.firstworldwar.com> (accessed 5 December 2011).

General John J. Pershing appointed his chief engineer, Lieutenant Colonel Amos Fries, to form a gas service with the goal of training and equipping forces with the capability to conduct offensive operations. General Pershing is quoted as saying “whether or not gas will be used in future wars in a matter of conjecture, but the effect is so deadly to the unprepared that we can never afford to neglect the question.”<sup>2</sup>

Meanwhile, the war department created the Chemical Warfare service in June 1918 to develop a defensive arm of the newly formed Chemical Warfare Service. This arm was primarily tasked with developing detection and protection systems. The Chemical Warfare Service became a permanent branch of the US Army in 1920. From 1930 to 1941 the Chemical Warfare Service focused its efforts toward production of chemical warfare agents, as well as developing systems to deliver them. The 4.2 inch mortar became the primary system for chemical agent delivery. In December 1941, President Franklin Roosevelt announced a “retaliation in kind” policy, whereby the United States reserved the right to use Chemical Weapons against any nation which attacked them first. This resulted in the creation of multiple new chemical units and increased capability while conducting combat operations in World War II. While our adversaries during World War II posed a threat of the use of chemical weapons the threat never materialized and however, the discovery of chemical agent stockpiles in Germany led Congress to maintain a Chemical Warfare Service. In August 1946, the Chemical Warfare Service became an official branch of the United States Army, the Chemical

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<sup>2</sup>Al Mauroni, “The US Army Chemical Corps: Past, Present, and Future,” *Army Historical Foundation*, <http://www.armyhistory.org/ahf2.aspx?pgID=877&id=133&exCompID=56> (accessed 5 December 2011).

Corps and was assigned the responsibility of radiological warfare as well as chemical and biological warfare.

The Korean conflict found the Chemical Corps utilized as a combat enabler, providing obscurant smoke to large troop formations throughout the theater of operations. The use of the 4.2 inch mortar system as a combat multiplier led the infantry branch to take control of this system in 1952. While chemical agents were not used during the Korean conflict, the Army wished to maintain an offensive chemical capability. This led to an increased desire to develop incapacitating agents, riot control agents, and herbicides. During the Vietnam War the Chemical Corps developed and utilized devices to locate enemy forces, was key to firebase protection through the use of flame field expedients, and utilized herbicides to clear fields of vegetation.

The conflict in Vietnam and the international out cry over the use of chemical and biological warfare agents; led to a 1969 report by the United Nations calling for the elimination of all chemical and biological weapons worldwide. This report coupled with two incidents of nerve agent exposure; one involving the death of sheep, and one involving Soldiers on the island of Okinawa, continued to raise questions about the continued need to maintain the chemical corps. President Richard Nixon publically renounced the United States use of chemical and biological agents and in 1969 congress put significant restrictions on the testing of nerve agents. In 1972, President Nixon nominated General Creighton Abrams as the next Chief of Staff of the Army, this nomination had significant impact on the future of the chemical corps.

General Abrams was charged with the reduction of the United States Army during the post Vietnam era, and in this capacity he began by conducting analysis of the current

manning of the United States Army and specifically formed an ad hoc study group to look at the consolidation of the chemical corps into other branches of the United States Army. This study group concluded that the Chemical Corps should cease to exist and operate as a special weapons department under the Ordnance corps; the Secretary of the Army agreed and the Chemical Corps was to be disestablished on 11 January 1973. This decision had to pass congressional approval, and congress chose to wait to disestablish the Chemical Corps as a branch of the United States Army. General Abrams died in office in 1974 and the Arab-Israeli war of 1973 showed that the Soviet Union had an increased desire to build offensive chemical and biological weapons capability. Based on this emerging threat; the United States Army Chief of Staff withdrew the earlier recommendation to disestablish the chemical corps and began to once again commission officers into the Chemical Corps.

The emerging chemical and biological threat posed by the Soviet Bloc during the cold war solidified the need to have a chemical defense capability. The 1980's saw a significant rise in the activity of the Chemical Corps with the activation of multiple chemical companies, and the development of new doctrine, detection, protection equipment, and decontamination systems. This rise in activity was critical to the success of coalition forces in conflict with Iraq in 1991, an adversary with a proven chemical warfare capability.

Despite this resurgence in activity, in 1972 and again in 1997, United States policy had a drastic effect on the mission of the Chemical Corps. These policy decisions, one to renounce the use of biological weapons, the other to renounce the use of Chemical Weapons placed the Chemical Corps in a purely defensive role in regard to chemical and

biological weapons. This was a distinct change of mission for the Chemical Corps; the offensive arm of the Chemical Corps was gone.

The attacks of September 2001 highlighted to the nation and the Corps that readiness for terrorism is necessary to mitigate its effect. After the September 2001 attacks, a new term started to permeate many American minds Weapons of Mass Destruction or WMD.<sup>3</sup> If a terror network could orchestrate an attack on the scale of September 2001 with what was considered “conventional weapons” what then could such a network do with a WMD?

### Problem Statement

The President of the United States publishes the *National Security Strategy* that serves as a basis for multiple other departments of the United States government to craft their individual strategies to solve the issues outlined by the President. This research will focus on the *National Security Strategy*, *National Defense Strategy*, and *National Military Strategy* as well as the documents that are built based on these key documents. In each of the national strategies one of the primary threats to the United States security is the proliferation and potential use of WMD by both state and non-state actors. Many definitions of WMD place these types of weapons as CBRN in nature. The preparedness of the United States Army to deal with the WMD threat is the responsibility of the United States Army CBRN Corps. The United States Army CBRN corps has the mission to conduct CBRN operations to protect national security both at home and abroad. The

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<sup>3</sup>Chemical Corps Regimental Association, “United States Army Chemical Corps History,” <http://www.chemical-corps.org/cms/history/cml-corps.html> (accessed 21 September 2011).

primary focus of this research is to determine if the United States Army CBRN corps is prepared to conduct WMD elimination missions.

#### Proposed Research Question

How much of the United States Army CBRN force structure is managed or maintained to counter the WMD threat?

#### Secondary Research Question

Is the United States Army CBRN Corps prepared to respond to the WMD threat by conducting WMD Elimination operations in support of a combatant commander? What doctrine, organizations, training, material, leadership, personnel and facilities (DOTMLPF) does the United States Army CBRN Corps have, or need, in order to mitigate the effects of the WMD threat through WMD Elimination operations?

#### Background and context of the research question

This research question plans to address what effect the WMD threat has had on the overall emphasis the Department of Defense, specifically the United States Army, has placed on CBRN and the result of that emphasis within the United States Army CBRN corps. The secondary research question addresses the CBRN corps readiness using the DOTMLPF of the CBRN corps in relation to the specified mission of WMD elimination.

This study aims to address multiple issues concerning the United States Army CBRN corps, and its current employment in today's operating environment. This study will specifically look at national strategy documents, and the emphasis that this topic receives from the senior leadership of the United States, and how that emphasis is put into practice throughout the United States Army and the United States CBRN corps.

The WMD threat throughout the world is one that is real and would be catastrophic in nature to both military forces on a battlefield or civilians at home. The United States Army CBRN corps is designed to combat such a threat. This research hopes to identify potential shortfalls or gaps in the design and employment of the United States Army CBRN corps and propose ways to mitigate these issues.

### Assumptions

Given the potential technical nature of the WMD elimination mission the CBRN corps is the most capable branch of the United States Army to conduct such missions. The CBRN corps will require assistance in the conduct of the tactical portion of WMD elimination missions. WMD elimination is the most important of the eight WMD related missions outlined in JP 3-40, *Combating Weapons of Mass Destruction*. If a properly trained and capable force conducts WMD elimination operations, then the other seven types of counter WMD missions may not be necessary.

### Definitions

Chemical, Biological, Radiological, and Nuclear (CBRN): CBRN is defined as Chemical, Biological, Radiological or Nuclear agents or material that can be weaponized or not-weaponized. This term is typically utilized to refer to WMD and is sometimes interchanged with WMD. Figure 1 from FM 3-11 depicts the relationship between the elements of CBRN.

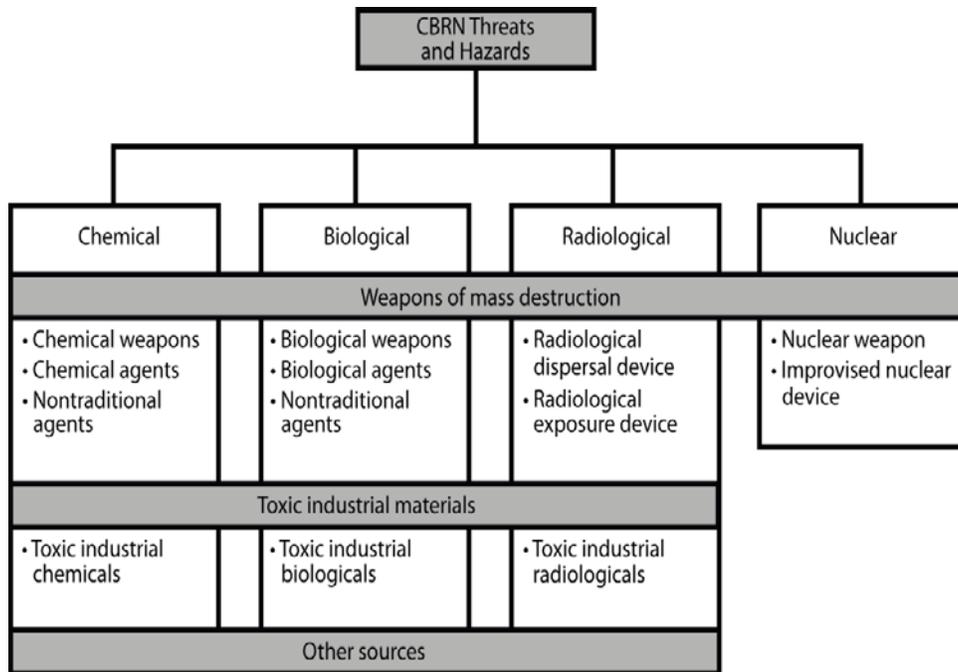


Figure 1. The Elements of CBRN

Source: Headquarters, Department of the Army, Field Manual 3-11, *Multi Service Doctrine for Chemical, Biological, Radiological and Nuclear Operations* (Arlington, VA: Government Printing Office, 2010), 1-7.

DOTMLPF: This acronym is defined in the *Joint Capabilities Integration and Development System* and refers to the Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities of a specific program or system. This acronym assists commanders and staffs in ensuring that all aspects of the system are evaluated prior to execution of an effort.<sup>4</sup>

Weapons of Mass Destruction: The definition of WMD differs. These differences stem from the agency or organization that is currently utilizing the term. WMD is defined

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<sup>4</sup>Chairman of the Joint Chiefs of Staff, Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01F, *Operation of the Joint Capabilities Integration and Development System* (Washington, DC: Government Printing Office, 1 March 2009).

in approximately 40 different ways, however, each of these definitions can be placed into one of 5 categories. The five major categories according to the Center for the Study of Weapons of Mass Destruction are: WMD as a synonym for nuclear, biological and chemical, WMD as CBRN weapons, WMD as CBRN with the addition of High Yield Explosive Weapons, WMD as weapons that cause massive destruction or kill large numbers of people and do not necessarily include or exclude CBRN weapons, and WMD as weapons of mass destruction or effect, potentially including CBRNE weapons and other means of causing massive disruption such as cyber attacks.<sup>5</sup> While each of these definitions are applicable to the definition of WMD, for the purposes of this study the focus will be on the second definition: WMD as CBRN. This definition will be utilized because it best captures the mission of the United States Army CBRN corps and will allow the research to look at the organization in terms of its ability to conduct WMD Elimination operations. It is the global threat of the proliferation and the use of WMD that keeps the existence of the CBRN corps relevant. The issue of WMD remains part of our *National Security Strategy*, *National Defense Strategy* and *National Military Strategy*. The United States has published a National Strategy on combating WMD and a National Military Strategy for combating WMD. The term WMD has become a household term; that is used and understood in American society.

WMD Elimination: Joint Publication 3-40, *Combating Weapons of Mass Destruction*, defines WMD elimination as “actions to systematically locate, characterize, secure, disable, or destroy WMD programs and related capabilities. The objective of

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<sup>5</sup>W. Seth Carus, Occasional Paper 4, *Defining Weapons of Mass Destruction* (Ft McNair, VA: Center for the Study of Weapons of Mass Destruction, February 2006).

WMD elimination operations is to prevent the looting or capture of WMD related materials; render harmless or destroy weapons, materials, agents and delivery systems that pose an immediate or direct threat to the Armed Forces of the United States and civilian population.” WMD elimination operations consists of four operational tasks, isolation, exploitation, destruction and monitoring and redirection.

### Scope

This study is limited to only the United States Army CBRN corps and will not consider the sister service CBRN capability, as well as addressing only one specific WMD related missions. The study aims to indentify and address gaps and shortfalls in the doctrine, organization and, material regarding the organization and employment of the United States Army CBRN corps.

### Limitations

Based on time constraints this study will undertake a qualitative narrative research approach; further study would include visits to the respective United States Army CBRN corps units with discussion and demonstration of their capabilities. The data contained in this study will remain unclassified. The majority of actual missions conducted by the United States Army regarding WMD are classified, and this study will not be able to conduct analysis of classified data. The study is being conducted by an active duty CBRN officer with multiple years of experience working with both conventional CBRN units and United States Special Operations forces CBRN units.

### Delimitations

This study is limited to the United States Army and specifically the United States Army CBRN corps. This study will focus on one WMD related mission, WMD elimination. This is based on the assumption that, if conducted correctly, WMD elimination operations will reduce the need to conduct other WMD related operations.

### Significance of Study

This study aims to assist in analyzing current force structure regarding the United States Army CBRN corps and its ability to conduct WMD elimination operations. The study intends to highlight the relevance of the United States Army CBRN corps in today's force structure. The methods utilized in this study can be a model to follow for future analysis of the United States Army CBRN corps and its relationship to other WMD related missions. The results of this study will assist the United States Army CBRN corps when constructing future force structure proposals regarding WMD related missions.

## CHAPTER 2

### LITERATURE REVIEW

In order to understand the emphasis that the WMD threat receives from the United States Government it is necessary to look at the documents that guide the strategies for our nation. These documents are tied to one in another in the sense that one document is the key driver for the contents of the document that follows it. For example, the *National Security Strategy*, written by the President, is the basis for the *National Defense Strategy*, written by the Secretary of Defense. This hierarchy of documents will allow the reader to see how the idea that WMD is a great threat to the security of the Nation and is a key theme throughout our national strategies. These national strategies are drivers for the *National Military Strategy*, and so forth. This research aims to create an obvious hierarchy from the national strategy documents to the military units that are tasked to carry out the missions outlined in these documents. It is important that this show the emphasis that the United States national leadership places on WMD operations in order to depict the potential gaps that may exist between what our strategy says and what is being done to carry out that strategy.

#### United States National Strategy Documents

The first document one looks toward is the *National Security Strategy*, that states:

To prevent acts of terrorism with the world's most dangerous weapons, we are dramatically accelerating and intensifying efforts to secure all vulnerable nuclear materials by the end of 2013, and to prevent the spread of nuclear weapons. We

will also take actions to safeguard knowledge and capabilities in the life and chemical sciences that could be vulnerable to misuse.<sup>6</sup>

The President continues with the theme of counter WMD operations by stating “The American people face no greater or more urgent danger than a terrorist attack with a nuclear weapon. And international peace and security is threatened by proliferation that could lead to nuclear exchange”<sup>7</sup> He continues by stating, “The effective dissemination of a lethal biological agent within a population center would endanger the lives of hundreds of thousands of people and have unprecedented economic, societal, and political consequences”<sup>8</sup> The inclusion of such language by in the *National Security Strategy*, and the previous definition of WMD as CBRN related weapons, is critical to demonstrate the emphasis that is placed on counter-WMD operations by the highest levels of government leadership.

The use of this language continues to permeate throughout all of our national strategy documents. The United States Department of Defense (DOD) is presented with the task of preventing the proliferation of WMD across the globe as it presents a significant threat to United States national security. This is articulated within the *National Defense Strategy*, “There are few greater challenges than those posed by chemical, biological, and particularly nuclear weapons. Preventing the spread of these weapons, and

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<sup>6</sup>The President, *National Security Strategy* (Washington, DC: Government Printing Office, May 2010), 20.

<sup>7</sup>Ibid., 23.

<sup>8</sup>Ibid., 24.

their use requires vigilance and obligates us to anticipate and counter threats”<sup>9</sup> Former Secretary of Defense Robert Gates continues by stating “Reducing the proliferation of WMD and bolstering norms against their use contribute to defending the homeland by limiting the number of states that can directly threaten us and dissuading the potential transfer of these weapons to non-state actors”<sup>10</sup> The *National Defense Strategy* alludes to the conducting of WMD elimination operations as having a direct relation to the security of the United States. Emphasis of this idea is reinforced in the *Quadrennial Defense Review (QDR)* for 2010, “As the ability to create and employ weapons of mass destruction spreads globally, so must our combined efforts to detect, interdict, and contain the effects of these weapons”<sup>11</sup> The *QDR* includes specific tasks that are essential to the prevention of WMD throughout the United States and the international community. These tasks include “Establish a standing Joint Task Force Elimination Headquarters. In order to better plan, train and execute WMD-elimination operations, the Department is establishing a standing Joint Task Force-Elimination (JTF-E) Headquarters with increased nuclear disablement exploitation, intelligence and coordination capabilities”<sup>12</sup> The stand-up of a JTF-E headquarters is an outward sign of the importance that the DOD places on WMD elimination operations.

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<sup>9</sup>Secretary of Defense, *National Defense Strategy* (Arlington, VA: Government Printing Office, June 2008), 14.

<sup>10</sup>*Ibid.*, 14.

<sup>11</sup>Secretary of Defense, *Quadrennial Defense Review* (Arlington, VA: Government Printing Office, February 2010), 34.

<sup>12</sup>*Ibid.*, 36.

This emphasis has led to the United States to publish the *National Strategy to Combat Weapons of Mass Destruction (NSCWMD)* this document states “Weapons of mass destruction could enable adversaries to inflict massive harm on the United States, our military forces at home and abroad, and our friends and allies”<sup>13</sup> The strategy which discusses the “three pillars”, referring to the three pillars of combating WMD they are counter-proliferation, non-proliferation, and consequence management. WMD elimination operations are related to the pillars in that they are included in the counter-proliferation pillar. The strategy emphasizes the importance of counter WMD operations as it relates to the security of the United States. The United States places significant emphasis on the WMD threat, this is evidenced by the use of counter-WMD language in the *National Security Strategy* and the publishing of a separate national security document concerning WMD. This emphasis is further stressed through our military strategy documents.

#### United States Military Strategy Documents

The largest arm of the DOD is the United States Army and while other organizations exist within DOD to combat WMD, this study seeks to look at the preparedness of the United States Army CBRN Corps. It is therefore necessary to seek information from the *National Military Strategy (NMS)* in order to see what emphasis our senior military officials place on the WMD threat. “Combatant commanders shall conduct prudent planning and be prepared to eliminate sources of WMD, providing the

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<sup>13</sup>The President, *National Strategy to Combat Weapons of Mass Destruction* (Washington DC: Government Printing Office, December 2002), 1.

President with an array of options for military action when necessary.”<sup>14</sup> Based on the *NSCWMD* the military published a similar document the *National Military Strategy to Combat Weapons of Mass Destruction. (NMSCWMD)* This document is outlines the “eight mission areas”<sup>15</sup> that concern the US plan to deal with the WMD threat. These eight mission areas include “offensive operations, elimination, interdiction, active defense, passive defense, WMD consequence management, security cooperation and partner activities, and threat reduction cooperation”<sup>16</sup> This study will primarily focus on one of the eight mission areas- elimination operations. The *NMSCWMD* defines elimination operations as operations systematically to locate, characterize, secure, disable, and/or destroy a state or non-state actor’s WMD programs and related capabilities”<sup>17</sup> This definition plays a key role in the conduct of counter-WMD operations.

#### United States Army Strategy Documents

The *2011 Statement on the Posture of the United States Army* states that the “Army is the DOD’s executive agent for Chemical and Biological Defense”<sup>18</sup> This

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<sup>14</sup>Chairman of the Joint Chiefs of Staff, *The National Military Strategy of the United States of America* (Arlington, VA: Government Printing Office, February 2011), 8.

<sup>15</sup>Secretary of Defense, *The National Military Strategy to Combat Weapons of Mass Destruction* (Arlington, VA: Government Printing Office, February 2006), 7.

<sup>16</sup>*Ibid.*

<sup>17</sup>*Ibid.*

<sup>18</sup>Secretary of the Army, *2011 Army Posture Statement* (Arlington, VA: Government Printing Office, March 2011), Information Papers.

charter has allowed the United States Army to provide significant input toward the development of joint doctrine concerning the conduct of WMD elimination missions. United States Army Training and Doctrine Command wrote *The United States Army Concept Capability plan (CCP) for Combating Weapons of Mass Destruction*: which examines the US Army's current capability and derives solutions to both maintain and improve the current capability across the force. The *CCP* states “ The entire philosophy of CWMD is changing from one of passively reacting to a WMD attack (the passive defense and CM (consequence management) mission areas of the *NMSCWMD*) to proactively and aggressively target and engage WMD threat networks before they can mount an attack”<sup>19</sup> This conclusion from the *CCP* is an example of the application of the national and military strategy documents. It shows that the United States Army will begin conducting offensive counter WMD operations such as WMD elimination operations.

#### United States Army CBRN Regiment and School Documents

Based on identification as the DOD executive agent for chemical and biological defense the United States Army has given the task of establishing a robust CBRN program to the US Army CBRN corps. The CBRN corps has taken this task and written the *Chemical Corps Regimental Campaign Plan (RCP)* and the *United States Army Chemical, Biological, Radiological, and Nuclear School Campaign Plan (USACBRNSCP)*. The *RCP* summarizes the skills necessary for the CBRN corps to conduct the missions that our nation demands, highlights the WMD threat and outlines

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<sup>19</sup>United States Army Training and Doctrine Command, *The United States Army Concept Capability Plan for Combating Weapons of Mass Destruction* (Fort Monroe, VA, March 2009), 25.

the CBRN corps plan to conduct WMD elimination operations. Despite the emphasis placed on the combat of WMD by our national strategies, the *RCP* highlights a deficiency in the emphasis placed on WMD by the United States Army by stating “In recent years we have lost force structure and billets through the Total Army Analysis (TAA) Process largely due to the fact that we will deploy not as whole formations”<sup>20</sup> The *RCP* also states that the CBRN corps must “sell the branch to the rest of the Army”<sup>21</sup> implying that the CBRN corps is not valued throughout the force. The *RCP* continues by outlining the mission, vision and end state of the CBRN corps; these elements assist in understanding the relationship between the national strategy documents and their impact on the war fighter at the unit level. The *RCP* highlights the five lines of effort for the CBRN corps, they are: “the Corps as a profession, train CBRN warriors, develop CBRN leaders, expand CBRN capabilities, and conduct CBRN operations”<sup>22</sup>

This study is concerned with the fifth campaign goal “conduct CBRN operations” This campaign goal highlights the conduct of “WMD counterforce operations”<sup>23</sup> included in this campaign objective is the conduct of WMD elimination operations, which according to the *RCP* are defined as “WMD elimination includes actions undertaken in hostile or uncertain environment to systematically locate, characterize, secure, disable or

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<sup>20</sup>Office of the Commandant, United States Army Chemical, Biological, Radiological and Nuclear Corps, *Chemical Corps Regimental Campaign Plan* (Fort Leonard Wood, MO, December 2010), 3.

<sup>21</sup>*Ibid.*

<sup>22</sup>*Ibid.*, 8.

<sup>23</sup>*Ibid.*, 21.

destroy weapons of mass destruction programs and related capabilities”<sup>24</sup> The *RCP* highlights the doctrine, and organizations that conduct the missions of the CBRN corps, including the WMD elimination mission. The *RCP* serves as a guide for the conduct of CBRN operations throughout the United States Army CBRN corps.

Aligned with the *RCP*, the *USACBRNSCP* discusses the methods by which we will develop of the CBRN warrior of the future. Similar to the *RCP*, the *USACBRNSCP* utilizes five lines of effort to streamline efforts they are: “develop the CBRN enterprise, train CBRN warriors, develop CBRN leaders, synchronize CBRN school operations, and take care of people/ensure quality of life”<sup>25</sup> These lines of effort are key to this study in highlighting the capability of the United States Army CBRN Soldiers across the joint, interagency, inter-governmental, multinational, industry and academic community.

#### Government Accountability Office Reports

The national, military, United States Army and CBRN corps strategies establish the need for WMD related capability within the United States Army. Despite this required capability it is occasionally suspected that these capabilities do not meet the required standards. These cases are investigated and reported on by the Government Accountability office (GAO). “The Government Accountability Office, the audit, evaluation and investigative arm of (the United States) Congress exists to support Congress in meeting its constitutional responsibilities and to help improve the

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<sup>24</sup>Ibid., 22.

<sup>25</sup>Office of the Commandant, United States Army Chemical, Biological, Radiological and Nuclear Corps, *United States Army Chemical, Biological, Radiological and Nuclear School Campaign Plan* (Fort Leonard Wood, MO, March 2011), 4.

performance of the federal government for the American people.”<sup>26</sup> This office has published multiple reports on the status of the military, and specifically the United States Army CBRN capability. This study is evaluating these documents to highlight some of the existing deficiencies that have been investigated previously. This will assist in establishing criteria for evaluation on the capability of the United States Army CBRN corps.

In January 2007 the GAO published a report titled *Management Actions are needed to close the gap between Army Chemical unit preparedness and states national priorities*.<sup>27</sup> The report investigated the readiness of United States Army Chemical Corps<sup>28</sup> and states that “there is a misalignment between the high priority that the DOD states that is places on chemical and biological readiness and the current low level of chemical unit readiness.”<sup>29</sup> This study aims to investigate if these gaps have been addressed.

The GAO reported on the budget concerning the WMD counter proliferation program in their report titled *Weapons of Mass Destruction: Actions needed to track*

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<sup>26</sup>United States Government Accountability Office, “About GAO,” <http://www.gao.gov/about/index.html> (accessed 17 December 2011).

<sup>27</sup>United States Government Accountability Office, *Management Actions are needed to close the gap between Army Chemical unit preparedness and states national priorities* (Washington, DC: Government Printing Office, January 2007).

<sup>28</sup>This report was completed prior to the official name change to the United States Army Chemical, Biological, Radiological and Nuclear corps in January 2008. The reference to the United States Army Chemical Corps are in keeping with the language on the report itself.

<sup>29</sup>United States Government Accountability Office, *Management Actions are needed to close the gap between Army Chemical unit preparedness and states national priorities* (Washington, DC: Government Printing Office, January 2007).

*budget execution for counter proliferation programs and better align resources with Combating WMD strategy.*<sup>30</sup> This report highlighted the differences in budget application between the non-proliferation, counter-proliferation and consequence management pillars of the *NSCWMD*; and concluded that the DOD utilizes the majority of its funding to conduct the consequence management pillar (including ballistic missile defense) which highlights the continued focus on passive defense rather than the offensive counter WMD operations. The overall conclusion of the GAO was that the “DOD counter proliferation resources are not clearly aligned with strategies.”<sup>31</sup> which demonstrates that the DOD does not put the necessary emphasis on the conduct of WMD related operations. The GAO published multiple additional reports concerning WMD and these reports continue along the same theme that despite the emphasis placed on WMD prevention in the national strategy documents the DOD does not place the necessary emphasis on this capability.

#### Contemporary Views

In his article, “A counter-WMD strategy for the Future,” Albert J. Mauroni addresses the issues that exist with the current United States strategy that is employed to combat WMD throughout the world. His focus is a discussion of the three pillars of the *NSCWMD*, non-proliferation, counter-proliferation and consequence management. He highlights the need to modify our strategy to combat WMD “The U.S. government

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<sup>30</sup>United States Government Accountability Office, *Weapons of Mass Destruction: Actions needed to track budget execution for counter proliferation programs and better align resources with Combating WMD strategy* (Washington, DC: Government Printing Office, September 2010).

<sup>31</sup>*Ibid.*, 9.

fixates on scenarios that envision terrorist use of ten-kiloton nuclear weapons, large releases of anthrax and smallpox, and extensive use of nerve and mustard agents in heavily populated U.S. cities, worst case scenarios that have little basis in reality”<sup>32</sup> This analysis stresses the need to change the majority of our efforts from the passive defensive posture, preparing for a catastrophic event, to an offensive mindset where we seek to dismantle an organizations ability to conduct operations utilizing WMD. This change of mindset is an important element in analyzing the capability of the United States Army CBRN corps ability to conduct WMD elimination operations. Mauroni stresses this point “The State Department and U.S. Special Operations command already recognize that the central approach to reduce threat of CBRN terrorism is to, in fact, “deter, detect, defeat, and respond to terrorism and their facilitators.”<sup>33</sup> These elements discussed by Mauroni, are all key elements to the conduct of WMD elimination operations.

This de-emphasis of WMD capabilities and the CBRN corps has led to a number of different academic articles about what the actual role of the CBRN corps is in the United States Army. For example, Colonel Anthony Skinner states in his paper *Combating WMD: Is it Really a Priority?* “Never has their been more relevance for the mission of the U.S. Army Chemical Corps, however, the paradigm of how the Chemical Corps is structured and utilized creates capability gaps that inhibit response to the WMD threat to the homeland and abroad.”<sup>34</sup> This article addresses multiple reasons for the de-

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<sup>32</sup>Albert J. Mauroni, “A Counter-WMD Strategy for the Future,” *Parameters* 40, no. 52 (Summer 2010): 62.

<sup>33</sup>*Ibid.*, 68.

<sup>34</sup>Anthony R. Skinner, “Combating WMD: Is it really a priority?” (Research Project, United States Army War College, Carlisle Barracks, PA, March 2008), Abstract.

emphasis of the CBRN corps and highlights the gap that exists between the national strategy documents and the capability of the United States Army CBRN corps. “While DOD generally has concurred with GAO findings and recommendations, little action has been taken to implement major changes to close the gap between preparedness and stated national priorities.”<sup>35</sup>

Cedrick Farrior’s monograph titled “Preparing for the Chemical, Biological, Radiological and Nuclear (CBRN) Threat within the Contemporary Operating Environment,” calls to question the attitude which is held by a majority of the CBRN corps. “One of the concerns of this monograph is that despite the identification that these weapons (WMD) have been used in different scenarios from the past the proper focus still does not exist to deal with the scenarios of the future. We have not mentally adjusted from our Cold War understanding of NBC employment”<sup>36</sup>

In the professional journal *Combating WMD*, Mr. Steven Rollins outlines a proposed structure of service level counter WMD task forces capable of conducting different elements of counter WMD operations. He corresponds the pillars of the *NSCWMD*, with the eight mission sets from the *NMSCWMD* in order to categorize them into tactical level capabilities that better suit each service. His argument is this organization of tasks assists the services in designing plans to complete the necessary WMD related operation. His categories are force projection, force application, (which includes WMD elimination), and force protection. This organization of WMD related

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<sup>35</sup>Ibid., 12.

<sup>36</sup>Cedrick A. Farrior, “Preparing for the Chemical, Biological, Radiological and Nuclear (CBRN) threat within the Contemporary Operating Environment” (Monograph School of Advanced Military Studies, Fort Leavenworth, KS, May 2004), 17.

operations is again enemy focused and continues the theme of conducting offensive operations against the WMD threat, rather than the passive defense attitude.

A structure to conduct WMD elimination operations is proposed in *JTF-WMD-Elimination: An Operational Architecture for Future Contingencies* by Colonel Raymond Van Pelt. Based on the conduct of counter-WMD operations in Iraq it became necessary to establish a standing Joint Task Force (JTF) in order to be prepared to conduct counter WMD operations. This JTF would focus on the mission of WMD elimination and would be manned from throughout the DOD and have the capability to conduct mobile collection, document exploitation, material exploitation, detention and interrogation, and various levels of CBRN response (including a laboratory capability). This proposed construct would increase the DOD capacity to conduct full-scale WMD elimination operations.

#### Joint Doctrine

Each of the national strategies, military strategies, and service level strategies and campaign plans assists in the production of the doctrine that governs the conduct of WMD related missions. The doctrine produced regarding the conduct of WMD related missions is utilized in investigations conducted by the GAO, as well as being analyzed by academics and senior policy officials alike. This doctrine will be a key element for the analysis of the capabilities of the United States Army CBRN corps.

“The National Defense Authorization Act for Fiscal Year 1994, Public Law No. 103-160, Section 1703 (50 USC 1522), mandates the coordination and integration of all

Department of Defense Chemical and Biological programs.”<sup>37</sup> Based on this federal law it is required that all doctrine regarding CBRN programs be Joint in nature. The United States Army CBRN school maintains the lead service responsibilities for the development of the tactical level CBRN doctrine. The United States Army CBRN school has assisted in the development of Joint Publication 3-11 *Operations in Chemical, Biological, Radiological and Nuclear (CBRN) Environments* which discusses WMD elimination operations as an element of the “Preventing Adversary CBRN Weapons Employment”<sup>38</sup> stating “GCC (Geographic Combatant Commanders) and subordinate JFC (Joint Force Commanders) plans should include every effort to prevent the adversary from successfully acquiring and delivering CBRN weapons, using the full extent of actions allowed by the rules of engagement (ROE)”

Joint Publication (JP) 3-40 *Combating Weapons of Mass Destruction* discusses the conduct of WMD elimination operations and highlight the four tasks associated with the conduct of these types of operations “WMD elimination operations consist of four principal operational level tasks: isolation, exploitation, destruction and monitoring and redirection”<sup>39</sup> The capability of the United States Army CBRN corps to conduct these operational level tasks will not be evaluated in this study, however, they are highlighted

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<sup>37</sup>Department of Defense, *Chemical and Biological Defense program: Annual Report to Congress* (Arlington, VA: Government Printing Office, March 2000), Executive Summary.

<sup>38</sup>Joint Staff, Joint Publication 3-11, *Operations in Chemical, Biological, Radiological and Nuclear (CBRN) Environments* (Arlington, VA: Government Printing Office, August 2008), III-3.

<sup>39</sup>Joint Staff, Joint Publication 3-40, *Combating Weapons of Mass Destruction* (Arlington, VA: Government Printing Office, June 2009), Annex A.

to assist in building the framework for the conduct of the tactical level tasks that will be evaluated. These publications are collections of information from various service level publications and outline the conduct of CBRN related operations within the Joint operating environment. JP 3-40 outlines the elements of the WMD-elimination mission in figure 2.

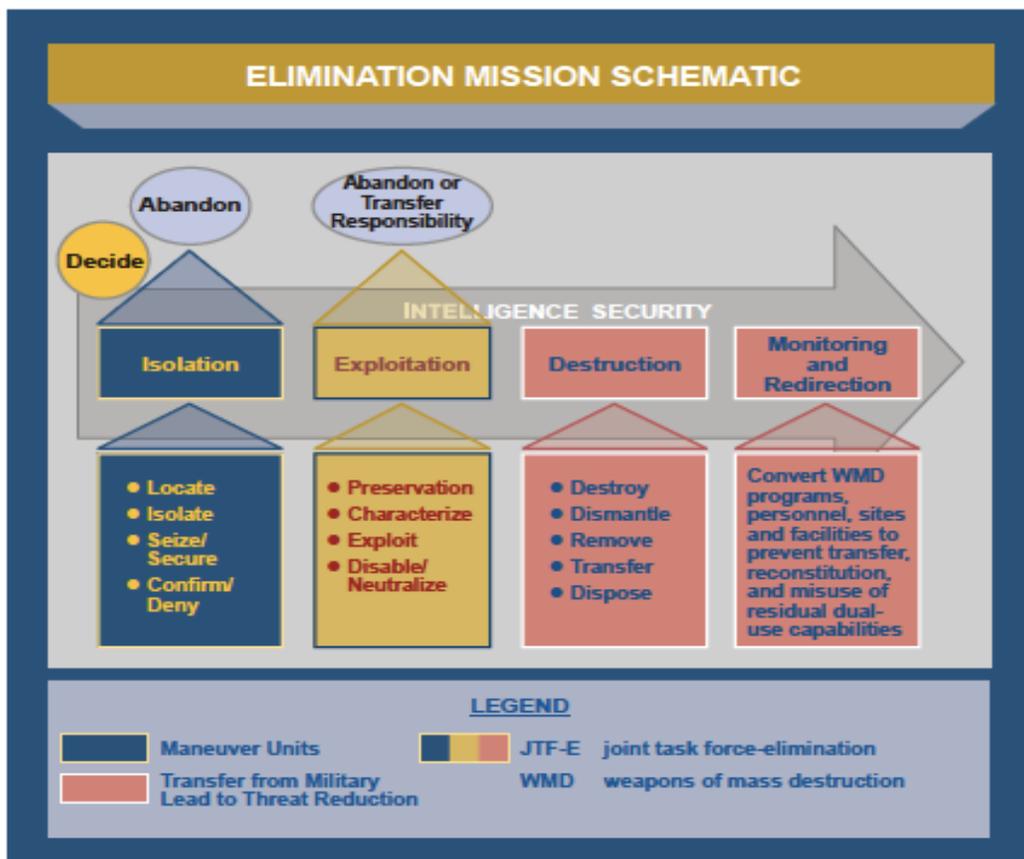


Figure 2. Elimination Mission Schematic

Source: Joint Staff, Joint Publication 3-40, *Combating Weapons of Mass Destruction* (Arlington, VA: Government Printing Office, 2009), A-2.

## Army Doctrine

While all doctrine regarding the conduct of CBRN operations is Joint in nature, each of the services still maintain service specific doctrine regarding the conduct of service specific CBRN operations. The United States Army has eighteen doctrinal publications regarding the conduct of United States Army specific CBRN operations. This study will analyze three specific Army CBRN doctrinal publications as they relate to the WMD Elimination mission.

Some publications, while not specifically Joint, are utilized as doctrine for multiple services in the conduct of their operations. One such publication is United States Army Tactics, Techniques and Procedures (ATTP) 3-11.23, *Multi-Service Tactics, Techniques, and Procedures for Weapons of Mass Destruction Elimination Operations* this document will be included in this section since it is a document that was not specifically produced by the United States Joint staff, however it contains key information regarding the WMD elimination mission. This publication discusses the emphasis that the national command places on the conduct of the WMD elimination mission as well as discussing the general conduct of the WMD elimination mission. This publication will be important to this study, as it serves as a basis for the conduct of WMD elimination mission.

Field Manual (Interim) 3-90.10, *Chemical, Biological, Radiological, Nuclear and High Yield Explosives Headquarters* discusses the WMD elimination mission in these terms “WMD-E operations consist of four operational level tasks: isolation, exploitation, destruction and monitoring and redirection. These four steps may be performed simultaneously in geographically separate sites but each site transitions through each of

these steps as well.”<sup>40</sup> This study will utilize the assertion that the WMD elimination can be conducted in multiple areas simultaneously to compare the doctrinal publication to the capability that currently exists.

### Table of Organization and Equipment

Table of organization and equipment (TOE) documents are defined as “a document that prescribes the official designation, normal mission, organizational structure, and personnel and equipment requirements for a military unit and is the basis for an authorization document”<sup>41</sup> This table is a baseline for how United States Army units will be equipped and organized, these tables are modified to fit the specific unit types depending on the mission of the unit. They then become “Modified Table of Organization and Equipment (MTOE)” documents, which are defined as “a document that prescribes the modification of a basic table of organization and equipment necessary to adapt it to the needs of a specific unit or type of unit”<sup>42</sup> The Maneuver Support Center of Excellence, which constructs, writes and publishes the doctrine and MTOE documents of the CBRN corps, has designated four specific units as capable of conducting the WMD elimination mission, Technical Escort Units (TEU), Special Forces Chemical Reconnaissance Detachments (SFCRD), Nuclear Disablement Teams (NDT) and Rapid

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<sup>40</sup>Headquarters, Department of the Army, Field Manual Interim 3-90.10, *Chemical, Biological, Radiological, Nuclear and High Yield Explosives Operational Headquarters* (Arlington, VA: Government Printing Office, 24 January 2008), 4-1.

<sup>41</sup>Headquarters, Department of the Army, Army Regulation 220-5, *Designation, Classification, and Change in Status of Units* (Arlington, VA: Government Printing Office, 15 April 2003), 8.

<sup>42</sup>*Ibid.*, 7.

Response Teams (RRT). The NDT and RRT elements are not under the direction of the United States Army Chemical, Biological, Radiological and Nuclear Center and School (USACBRNCS) and will not be included in this study, however the TEU and SFCRD will be studied to determine their capability to conduct the WMD elimination mission. The MOTE documents of these units will play a key role in the analysis of their specific organization and thus capability to conduct WMD elimination.

## CHAPTER 3

### RESEARCH METHODOLOGY

The key question of this research study, as stated in the primary research question, How much of the United States Army CBRN force structure is managed or maintained to counter the Weapons of Mass Destruction (WMD) threat? and more importantly the research aims to discover what gaps might exist in this force structure. Many previous studies discuss the lack of emphasis of the DOD CBRN defense capability. These studies are the basis for conducting this further analysis of the United States Army CBRN capability.

#### Research Design

This research will follow a qualitative design based on the article *Analyzing Qualitative Data* by Ellen Taylor-Powell and Marcus Renner from the University of Wisconsin; the method to accomplish this goal will be primarily a document review. The qualitative method focuses on the review of narrative data and text. The research design was selected because the conclusions drawn from the method will be based on the view of the researcher and not on quantitative data. However, given the limitations of this study it is not possible to compile enough quantitative data in order to draw adequate conclusions. The disadvantages of this qualitative research design are that the bias of the researcher plays a role in the conclusions and the conclusions drawn by this study are subject to interpretation as they are subjective in nature. Despite these disadvantages it is the aim of this study to present an unbiased view of the primary and secondary research questions and to draw conclusions based on the researched data.

## Background Document Review

This review will consist of an analysis of United States strategic documents; this research will conduct a hierarchical review of documents starting with the major national strategy documents and their statements regarding WMD. The research will move to conduct an analysis military strategy documents that are built from the national strategy documents, moving on to the individual service strategies and finally individual service doctrine. This method will show the relationship between national strategy documents and the military capability that is built because of these documents. The purpose behind the hierarchical review is to emphasize the importance placed on counter WMD operations by the United States government and how it does or does not translate to the executing units.

The basis of this method will be the DOTMLPF model. The DOTMLPF model will be utilized because it will ensure that all necessary aspects of the WMD elimination mission are considered. The selected mission set, WMD elimination operations, will be considered because of the “eight mission sets” highlighted in the *NMSCWMD* it is the most important mission regarding WMD that will be conducted. This study assumes that the WMD elimination operation will be able to prevent the WMD threat from becoming a larger threat and potentially supersede the need to conduct any of the other seven missions. The design of this methodology can be utilized for each of the eight mission sets outlined in the *NMSCWMD* in order to conduct analysis of all of the published capabilities of the United States Army CBRN Corps.

## DOTMLPF Model Explanation and Design

All of the elements of DOTMLPF, while equally important, will not be considered in this study due to the nature of the study. Based on documentation the research is capable of conducting analysis and drawing conclusions concerning doctrine, organization, and material. A key limit of this study is that it will focus on document review, which is how the United States Army has designed units to function. The elements of DOTMLPF are often very different in actual application. In conducting analysis of these elements of the DOTMLPF model, it is essential to define each element and discuss the importance of each element to the study. These definitions will set the framework to allow conclusions regarding the capability of the United States Army CBRN corps to be drawn. The criterion used to evaluate the different elements of DOTMLPF is the final element that will assist in answering the questions posed by this study.

The initial element of the DOTMLPF model that will be evaluated is doctrine, more specifically military doctrine concerning the conduct of WMD elimination operations. Doctrine is defined as “fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.”<sup>43</sup> Doctrine is established using history, theory and experience. Doctrine gives planners a point of departure in which to begin their analysis of a situation or problem. Doctrine is not military strategy, rather it is a method by which the military can look at themselves and evaluate what inherent capabilities do we have,

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<sup>43</sup>Joint Staff, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Arlington, VA: Government Printing Office, November 2010), 104.

what is our mission, how are we designed to carry out this mission, and how we have done these missions in the past. Doctrine will assist this study in establishing a baseline of designed capabilities for the conduct of WMD elimination operations.

The doctrine pertaining to the conduct of WMD elimination operations within the United States Army CBRN corps will be evaluated using the criteria of completeness, and feasibility. Completeness addresses the ability of the doctrine to address all aspects of the mission set that it discusses, this includes the operational fundamentals, planning considerations, sustainment operations regarding WMD elimination operations. The nature of doctrine is that it is a complete product to accomplish the mission that is discussed; however doctrine suffers from the fact that it takes much time and effort to change. In evaluating the doctrine governing WMD elimination, it is important to ensure that this doctrine is as up to date as possible given the importance of this mission set. In establishing doctrine, doctrine writers must evaluate the ability of the force to conduct the operations that they have been tasked for. An evaluation of this ability will display the feasibility of the doctrine itself. The key question to ask is “Based on what is written; can the unit that is being considered accomplish the task?” If either of these criteria are not met; then it is critical that an evaluation of the doctrine governing a specific mission set be conducted and potential changes to the doctrine be implemented.

Doctrine drives the way that the military sees itself, however there are established guidelines to the way that a military unit is organized. The organization of a military unit is hierarchical in structure, and each unit is organized based on the necessary capability that is designed for. The United States Army utilizes a modified table of organization and equipment (MOTE) to direct what units specified mission is and how a unit will be

organized with both personnel and equipment. The analysis of individual unit organization will allow this study to evaluate if the designed unit structure is adequate for the conduct of the WMD elimination operation. Organization will be evaluated using the criteria of size based on scope of mission, capability of MTOE equipment to accomplish the assigned tasks, and the command structure necessary for mission accomplishment. These criteria will assist this study in evaluating gaps and shortfalls between the assigned mission of the unit and the ability of that the unit to conduct assigned missions.

The final element of the DOTMLPF model to be evaluated is the material utilized to conduct the WMD elimination mission, including both MTOE and commercial-off-the-shelf (COTS) equipment. Evaluation of the equipment that a unit has to conduct both the highly technical elements the WMD elimination is vital to answering the research questions posed by this study. Identification and evaluation of this equipment will be limited, by the research design, however, and will be based on written capability evaluations since hands on evaluation is beyond the scope of this research.

### Conclusion and Summary

The aim of this study is to convey the importance placed on our national security concerning the use of WMD. The primary goal is to analyze the readiness of the United States Army CBRN corps to face the WMD threat in the contemporary operating environment utilizing qualitative research. The aim of this is to methodology is to present an un-biased analysis of the capability of the United States Army CBRN corps and propose solutions to any gaps that may exist. The results of this method are contained in the next chapter.

## CHAPTER 4

### ANALYSIS

The aim of this research study remains to determine the capability of the United States Army CBRN corps to conduct the WMD elimination mission. This study is essential to the United States Army CBRN corps in determining the mission of the corps in the future. The strategic direction documents that guide the United States government refer to the need to mitigate the WMD threat worldwide; this study aims to identify what the United States military, specifically the United States Army CBRN corps, is doing to follow these guidelines in reference to the WMD elimination mission. This mission plays an essential role in not only the protection of our interests abroad, but also more importantly the protection of the homeland. The rise of the non-state actor in the contemporary operating environment makes the mission of WMD elimination mission more important than ever.

The research method utilized during this study is a qualitative narrative method following elements of the DOTMLPF model. This model consists of reviewing the doctrine, organization, and material and will provide analysis regarding the conduct of the WMD elimination mission. This study is limited in nature due to its dependence on document review and the inability to conduct field analysis based on time limitations.

The primary research question asks how much of the United States Army CBRN corps force structure is managed to counter the WMD threat. The basis for this question is the CBRN corps movement from the passive defense posture to one of active defense against the WMD threat within the contemporary operating environment. This change in

posture is a recent development and will potentially dictate the future of the United States Army CBRN corps.

### Doctrine

The nature of military doctrine is that it will be adequate to cover the intended topic. If it is not adequate, then more military doctrine can be written to adequately cover the intended topic. The development of military doctrine in an unconstrained environment can create an situation whereby the military doctrine says that it is necessary to conduct a certain type of operation; yet based on the organization and capability of the unit this type of operation is not feasible. This is the case with the WMD elimination mission. The many doctrinal publications that contain elements of this mission are thorough and cover the topic well, however, in practice the force structure of the United States Army CBRN corps is such that the corps is limited in their ability to conduct the tasks the military doctrine states are part of their mission set. This research found that the doctrine regarding the topic of WMD elimination operations is complete; although this has impacts to other elements of the study.

While the United States Army, specifically the United States Army CBRN corps, is the lead service for CBRN joint doctrine; the joint nature of CBRN doctrine assists in identifying resources necessary to conduct the WMD elimination mission from all of the services. This study found that joint doctrine is complete in addressing the conduct of the WMD elimination mission. Joint Publication 3-11 *Operations in Chemical, Biological, Radiological, and Nuclear Environments* and Joint Publication 3-41 *Chemical, Biological, Radiological and Nuclear Consequence Management*, discuss the conduct of the WMD elimination mission as an essential element in the prevention of WMD attacks,

however they do not specifically address the conduct of the WMD elimination mission. Joint Publication 3-40 *Combating Weapons of Mass Destruction* addresses the WMD elimination mission in appendix A; which identifies the elements of the WMD elimination mission, addresses key planning considerations, and tasks specific geographic combatant commanders with areas regarding the WMD elimination mission. While this document maintains that small scale WMD elimination missions can be taken on by the individual combatant commanders "Small scale WMD elimination operations may be handled within a CCDR's pre-existing command structure by relying on limited technical augmentation capabilities"<sup>44</sup> This study has found that due to the strategic emphasis on WMD related operations, this difficult to implement. The conduct of the WMD elimination operation will be joint in nature based on resources and capability. The *Handbook for Joint Weapons of Mass Destruction Elimination Operations*, originally published as a separate document in 2007 is included in JP 3-40 as an appendix. This appendix serves as an operational planning guide for WMD elimination operations in the joint environment. In this capacity, the document completely addresses the conduct of the WMD elimination mission.

The United States Army CBRN corps, in coordination with the United States Army Maneuver Center of Excellence, maintains all United States Army related CBRN doctrine. This includes eighteen publications which address the conduct of CBRN related operations at the tactical level; of these eighteen publications three have been identified as relating to the WMD elimination mission. *Multi-Service Tactics, Techniques and*

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<sup>44</sup>Joint Staff, Joint Publication 3-40, *Combating Weapons of Mass Destruction* (Arlington, VA: Government Printing Office, June 2009), Annex A-9.

*Procedures for WMD Elimination Operations* (MTTP3-11.23), Field Manual (Interim) 3-90.10 *CBRNE Operational Headquarters* (FMI 3-90.10) and Field Manual 3-11.20 *Technical Escort Operations* (FM 3-11.20) are the three publications that have been designated by the USACBRNS as doctrine relating to the WMD elimination mission.

*Multi-Service Tactics, Techniques and Procedures for WMD Elimination Operations* (MTTP 3-11.23) addresses the planning considerations necessary for the conduct of the WMD elimination mission from both the operational and tactical levels. “WMD elimination missions require extensive collaborative planning, coordination, and execution oversight by commanders and staffs and will likely involve teams of experts located around the world as part of a multi-Service effort.”<sup>45</sup> This publication continues by addressing each operational level task, isolation, exploitation, destruction and monitoring and redirection, and including planning considerations at the operational and tactical level for each of these mission specific areas. “Planning for WMD elimination operations requires close synchronization with select CBRN-trained personnel and supporting elements to engage in the isolation, exploitation, destruction, and monitoring and redirection of adversary WMD programs.”<sup>46</sup> This publication discusses the integration of WMD elimination targets into the established targeting cycle, this inclusion is critical to allow commander’s to properly allocate the resources necessary to conduct this type of mission. The publication outlines a notional force package necessary to

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<sup>45</sup>Headquarters, Department of the Army, Army, Tactics Techniques and Procedures 3-11.23, *Multi-Service, Tactics, Techniques and Procedures for Weapons of Mass Destruction Elimination Operations* (Arlington, VA: Government Printing Office, 10 December 2010), A-1.

<sup>46</sup>*Ibid.*, A-3.

conduct the WMD elimination mission. This force package is extensive, and allows all services to understand the amount of forces necessary to conduct this type of mission. The publication highlights planning considerations for working within certain environmental conditions as well as special considerations regarding integration into the military health system. The publication covers the preparation, execution and recovery aspects of the conduct of a WMD elimination mission. This publication completely addresses the conduct of the WMD elimination mission and allows all service components to have the same information in reference to the planning and execution of the WMD elimination mission.

Field Manual (Interim) 3-90.10 *CBRNE Operational Headquarters* discusses the structure, planning considerations and capability of the CBRNE operational headquarters. FMI 3-90.10 specifically discusses the formation of the Joint Task Force Elimination (JTF-E), “The three primary mission sets that the CBRNE operational headquarters is designed for and required to be ready to execute include the WMD-E set, the JTF headquarters mission set, and the civil support mission set.”<sup>47</sup> The CBRNE headquarters can be tasked to form the JTF-E headquarters, which is a specialized task force, designed to conduct the WMD elimination mission. The WMD elimination mission is specifically addressed in chapter four of FMI 3-90.10, and includes planning considerations and units capable of conducting the WMD elimination mission. This manual addresses the WMD elimination mission and the command and control structure necessary to conduct such an operation throughout a theatre of operation. The publication assists in the understanding

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<sup>47</sup>Headquarters, Department of the Army, Field Manual Interim 3-90.10, *Chemical, Biological, Radiological, Nuclear and High Yield Explosives Operational Headquarters* (Arlington, VA: Government Printing Office, 24 January 2008), 2-1.

of the CBRNE operational headquarters and the relationship to the WMD elimination mission.

Field Manual 3-11.20 *Technical Escort Battalion Operations* outlines the mission, operations, and planning relating to the technical escort battalion. “Deploy task-organized teams in the continental United States (CONUS) and outside the continental United States (OCONUS) to conduct TE (technical escort) and CBRN hazard characterization, monitoring, disablement, and elimination support operations.”<sup>48</sup> This field manual does not address the specific conduct of the WMD elimination mission, however, it provides a good overview of the operations within one of the units capable of conducting the WMD elimination mission. This publication is complete in addressing the planning considerations or the employment of the technical escort battalion, to include their employment during the WMD elimination operation.

Field Manual 3-05.132 *Special Operations Forces Chemical, Biological, Radiological and Nuclear Operations*, while not managed by the USACBRNS, addresses the operations of the special forces group CBRN reconnaissance detachment (SFCRD). This unit is capable of conducting elements of the WMD elimination mission. Similar to FM 3-11.20 *Technical Escort Battalion Operations*, this publication addresses the planning considerations for the employment of the SFCRD and is considered based on the units capability to conduct the WMD elimination mission. This publication is adequate in addressing the employment of the SFCRD, and while it does not address the WMD elimination mission specifically, it provides a baseline for planning.

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<sup>48</sup>Headquarters, Department of the Army, Field Manual 3-11.20, *Technical Escort Battalion Operations* (Arlington, VA: Government Printing Office, 27 August 2007), 1-1.

The overall assessment of both the Joint and Army doctrine regarding the conduct of the WMD elimination mission is that the doctrine is complete and addresses the WMD elimination mission. The doctrine covers multiple planning and resource considerations regarding the conduct of the WMD elimination mission and these considerations will be critical to planners when faced by a potential WMD elimination mission. While the study has determined that the doctrine is complete, the feasibility of the identified units to conduct a mission of this scope is limited. This limitation will be highlighted in the following sections. This study has determined that the doctrine regarding the WMD elimination mission is complete although the feasibility of the doctrine is in question.

#### Organization

The current organizations managed by the United States Army CBRN corps designed to conduct the WMD elimination mission are the technical escort battalion CBRN response teams (CRT) and the SFCRD. These units are designed to conduct the WMD elimination mission although; they lack the size to conduct these missions unilaterally. The analysis of the MTOE documents for both units is the basis for this section of the study. This conclusion is in accordance with the research design for this study.

The MTOE document is derived from the analysis of the units mission and designed capabilities. These documents are constructed and divided by section within the larger unit being addressed. This division is annotated by individual line numbers and utilized for both the personnel and equipment sections of the document. The personnel section addresses what personnel the unit by position, required grade or rank requires, and any specialized skill sets necessary for the position. The equipment section of the

document addresses the type and amount of equipment that the unit will be allocated based on the unit mission.

“Expand the Army's 20th Support Command (CBRNE) capabilities to enable it to serve as a Joint Task Force capable of rapid deployment to command and control WMD elimination and site exploitation missions by 2007”<sup>49</sup> The 2006 *QDR* became the driver for the design and implementation of the JTF-E. The JTF-E is built around the CBRNE operational headquarters and is uniquely designed to command and control the WMD elimination mission. The design of the JTF-E is mission dependent, however the general design consists of a CBRN element, an explosive ordnance disposal element and a robust intelligence collection and dissemination capability. The CBRN brigade headquarters, built around the headquarters of the United States Army’s 48th CBRN Brigade, can form a smaller WMD-E task force. The brigade was designed to account for the lack of personnel capacity to conduct WMD elimination. The unique capability necessary to conduct the WMD elimination operation can be found in this headquarters as well as it’s subordinate elements, specifically the CRT, which are organic to the technical escort battalions which are organic to the 48th CBRN Brigade.

While this design is ideal for the conduct of the WMD elimination mission; it is necessary that these capabilities are properly integrated into the operations process. WMD elimination missions require specialized planning for each element, as highlighted in the previously discussed doctrine, and need to be fully integrated into the targeting

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<sup>49</sup>Secretary of Defense, *Quadrennial Defense Review* (Arlington, VA: Government Printing Office, February 2006), 51.

process. This integration must be facilitated by the JTF-E or CBRNE elements within their respective units.

The WMD elimination mission is planned and resourced at the strategic and operational levels of conflict, however they are conducted at the tactical level. These tactical missions have significant strategic impacts throughout not only the theatre of operation, but within the strategic view of the United States. The United States Army CBRN corps has two tactical elements that are designed to conduct the WMD elimination mission.

The first unit capable of conducting the WMD elimination mission to be addressed in this study is the technical escort battalion. Two technical escort battalions exist in the United States CBRN corps. According to the MTOE document, the mission of the battalion is “to deploy CONUS/OCONUS to conduct CBRNE assessment, disablement, elimination, escort, site remediation/restoration in support of combatant commanders and lead federal agencies.”<sup>50</sup> The MOTE document identifies that the battalion consists of a headquarters element (seventy one personnel) three technical escort companies, each consisting of a company headquarters element (seven personnel each) and four CRT elements (fifteen personnel each) for a total of twelve CRT elements. The total strength for the battalion is two hundred and seventy two personnel.<sup>51</sup>

The focus of this study is in reference to the technical escort battalion is the CRT based on their unique capability to conduct the WMD elimination mission. The CRT

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<sup>50</sup>Force Management System Website, *HHC TE Battalion Approved Modified Table Of Organization and Equipment*, DOCNO 03635RFC01 (prepared 26 March 2012), Section I.

<sup>51</sup>*Ibid.*, Section II.

consists of a combination of twelve CBRN specialists and three explosive ordnance disposal (EOD) personnel. The inclusion of the EOD personnel within the CRT make them uniquely capable of conducting render safe procedures within the WMD elimination framework. This capability increases their technical expertise and overall functionality on the battlefield. These teams are the key tactical element within the technical escort battalion and would be responsible for the tactical conduct of the WMD elimination mission. These teams, though small, are highly specialized and uniquely capable of conducting CBRNE operations, including elements of the WMD elimination mission.<sup>52</sup>

The major issue regarding the CRT is the limited number. A total of twenty four teams exist within the CBRN corps and they are not capable of conducting large scale WMD elimination missions unilaterally. This limited number of teams impacts the ability of the CBRN corps overall in their conduct of the WMD elimination mission.

The CRT is equipped with various Army common equipment as well as commercial off the shelf equipment in order to conduct their mission. The specific material utilized to conduct the WMD elimination mission will be analyzed in the material section of this chapter, however, it is necessary to highlight some specific equipment that the CRT is allocated in order to understand the capability of this element.

The individual CRT is equipped with three 1 1/4 ton high mobility multi wheeled vehicles, one 1 1/4 ton high mobility cargo trailer, and two light tactical trailers in order to transport personnel and equipment. The teams are armed with one machine gun 5.56

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<sup>52</sup>Force Management System Website, *HHC TE Battalion Approved Modified Table Of Organization and Equipment* DOCNO 03635RFC01 (prepared 26 March 2012), Section II.

millimeter: M249, fourteen rifles 5.56 millimeter: M16A2 and, fifteen pistols 9 millimeter automatic to provide security and force protection, and a collection of communications equipment.<sup>53</sup> The requirement to secure a WMD site prior to the conduct of the elimination is extremely difficult given the limited amount of weapons that are organic to the CRT. These items are common to many United States Army units and provide the CRT with the ability to be somewhat self sufficient for small scale WMD elimination missions. If a team is requested to conduct the WMD elimination mission on a large scale, however, it would require augmentation by a larger and more capable force in order to provide the necessary force protection for the mission.

The second unit identified as capable of conducting the WMD elimination mission is the SFCRD. Currently seven SFCRD elements are assigned throughout the force, five active duty elements and two are in the national guard. These detachments are assigned to the seven special forces groups within United States Army Special Operations Command, but their MTOE is managed by the USACBRNS. The MTOE mission for the SFCRD is “Provide chemical, biological, radiological, and nuclear (CBRN) reconnaissance and surveillance support to the geographic and functional combatant commanders intent and objectives, in Special Operating Forces (SOF) strategic, operational, and tactical missions in all environments (permissive, uncertain, and hostile)”<sup>54</sup> The detachment consists of a headquarters element (two personnel) and four

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<sup>53</sup>Force Management System Website, *HHC TE Battalion Approved Modified Table Of Organization and Equipment* DOCNO 03635RFC01 (prepared 26 March 2012), Section III.

<sup>54</sup>Force Management System Website, *Chemical Reconnaissance Detachment (SF) Modified Table of Organization and Equipment*, DOCNO 03520RSP01 (prepared 26 March 2012), Section I.

SFCBRN reconnaissance teams consisting of four personnel each for a total of eighteen personnel.<sup>55</sup> The total number of SFCBRN reconnaissance teams in the United States Army is twenty eight, however, these teams are much smaller than the CRT elements.

The SFCRD is equipped in a similar manner as the CRT, however they are not equipped with any organic mobility platforms, thus making it necessary to depend on other elements for transport to and from the objective locations. This lack of organic mobility asset hinders the teams ability to conduct the WMD elimination mission unless external support is provided. The SFCRDs are armed with eighteen carbines 5.56 millimeter: M4A1 and, eighteen pistols 9 millimeter automatic, and four launchers grenade M203A2. to provide limited security and force protection, as well as a collection of communications equipment.<sup>56</sup> The difference between the equipment of the SFCRD and the CRT is that the SFCRD has special operations forces variant items of equipment and not military standard equipment. These items are necessary for the SFCRD to fully integrate with the special operations forces that they are designed to support. The SFCRD faces similar issues to that of the CRT because they are unable to provide security for themselves, and therefore will require external support for not only transportation purposes but for security as well. The number of SFCBRN reconnaissance teams, their support mission to special operations forces and equipment capability gaps hinder the

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<sup>55</sup>Force Management System Website, *Chemical Reconnaissance Detachment (SF) Modified Table of Organization and Equipment*, DOCNO 03520RSP01 (prepared 26 March 2012), Section II.

<sup>56</sup>Force Management System Website, *Chemical Reconnaissance Detachment (SF) Modified Table of Organization and Equipment*, DOCNO 03520RSP01 (prepared 26 March 2012), Section III.

SFCRDs ability to fully dedicate themselves to the WMD elimination mission. Included below is a chart depicting the number of elements in the United States Army CBRN corps, the tactical element manning, the mobility platforms, and armament

Table 1. CBRN Corps Units and MTOE Equipment Capability

Unit	Number of Elements (total in US Army CBRN Corps)	Number of Personnel (per tactical element)	Number and Type of MTOE Vehicles (per tactical element)	Number and Type of MTOE Weapons (per tactical element)
Technical Escort CBRN Response Team	24	15	3x HMMWV, 1x 1 1/4 Ton Cargo Trailer, 2x 3/4 Ton Light Tactical Trailers	14x Rifle 5.56 millimeter: M16A2, 1x Machine Gun 5.56 millimeter: M249 15x Pistol 9 millimeter automatic
Special Forces Chemical Reconnaissance Detachment	28	4	None	18x Carbine 5.56 millimeter: M4A1, 18x Pistol 9 millimeter automatic, 4x Launcher Grenade: M203A2

*Source:* Created by author utilizing data from HHC TE Battalion Approved Modified Table Of Organization and Equipment DOCNO 03635RFC01 (prepared 26 March 2012); Chemical Reconnaissance Detachment (SF) Modified Table of Organization and Equipment, DOCNO 03520RSP01 (prepared 26 March 2012).

This research has determined that the mission command structure designed to accomplish the WMD elimination mission is capable of accomplishing the mission. The integration of WMD focused targeting is essential to the resourcing and execution of

these targets. The creation of the JTF-E element will assist the combatant commanders in the selection and execution of WMD related targets. The major limitation in regard to the conduct of the WMD elimination mission is the amount of the units that are capable of executing the WMD elimination mission. A limited number of CRTs and SFCRDs exist and thus this limits the United States Army CBRN corps capability to conduct WMD elimination. These units are further limited by their MTOE equipment; which is inadequate to execute all elements of the WMD elimination mission, specifically the task of seize and secure.

### Material

The conduct of the WMD elimination mission includes “the actions to systematically locate, characterize, secure, disable, or destroy WMD programs and related capabilities”<sup>57</sup> The material, or equipment, used in the conduct of the WMD elimination mission can be categorized into two categories. MTOE equipment that is standard for all units of a certain type within the United States Army. This equipment is listed on the MTOE document for that unit. This equipment has been acquired through the military procurement system, and therefore meets the performance specifications set forth by the United States Army. The technical nature of the WMD elimination mission requires specialized equipment not found in the United States Army inventory and therefore it is purchased from commercial manufacturers, this equipment is referred to as commercial-off-the-shelf (COTS). In order to fully analyze the capability of the CBRN

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<sup>57</sup>Joint Staff, Joint Publication 3-40, *Combating Weapons of Mass Destruction* (Arlington, VA: Government Printing Office, June 2009), Annex A.

corps to conduct the WMD elimination mission, this study compared the equipment sets of the CRT and SFCRD.

The CRT and SFCRD are both categorized as CBRN units according to their MTOE so therefore they will have similar MTOE equipment. The CBRN equipment common to both elements utilized to conduct the WMD elimination mission includes the Alarm: Chemical Agent Automatic M22, Monitor Chemical Agent, Radiac Set A/N VDR-2, Radiac Set PDR-75, Radiac Set PDR-77 and, Radiac Set UDR-13.<sup>58</sup> Each of these items has been tested against the standards set forth by the US Army and has met these specifications.

The Alarm, Chemical Agent Automatic M22 is designed to provide early warning to the presence of chemical warfare agents in the environment. “The ALARM, CHEMICAL AGENT, AUTOMATIC: M22 detects and senses chemical warfare nerve (G-Series) and blister (H-Series) agents in the air”<sup>59</sup> The M22 is designed to be a stand alone detector, and it a large items of equipment that is not designed to be transported during operation. This lack of transportability impacts the capacity to be useful during WMD elimination missions. The capability of the M22 is limited to the detection of only chemical warfare agents in the nerve (G-series) and blister (H-series); this item of

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<sup>58</sup>Force Management System Website, *HHC TE Battalion Approved Modified Table Of Organization and Equipment* DOCNO 03635RFC01 (prepared 26 March 2012), Section III; Force Management System Website, *Chemical Reconnaissance Detachment (SF) Modified Table of Organization and Equipment*, DOCNO 03520RSP01 (prepared 26 March 2012), Section III.

<sup>59</sup>Headquarters, Department of the Army, *Technical Manual 11-6665-321-12&P, Technical Manual Operator's and Unit Maintenance Manual for Alarm, Chemical Agent Automatic:M22* (Arlington, VA: Government Printing Office, 1 March 1998), 1-1.

equipment, while useful in specific situations, is limited in its capability to be useful in the WMD elimination mission.

The Alarm, Chemical Agent Automatic M22 is still included in the MTOE document of both the CRT and SFCRD, although it is being replaced by a different item of equipment, the Joint Chemical Agent Monitor (JCAD) M4. The JCAD has increased capability over the M22 in that it is able to detect nerve (G-series), blister (H-series) and blood (AC/CK) and is significantly smaller in size, thus making it easily transportable. The JCAD is better suited than the M22 to be utilized for the WMD elimination mission.

The Monitor, Chemical Agent (CAM), and the Improved Monitor Chemical Agent (ICAM) are designed as point detection monitors to monitor areas for the presence of chemical warfare agents. “Used by ground forces to search out clean areas; to search and locate contamination on personnel, equipment, ships’ structures, aircraft and land vehicles, buildings and terrain; and to monitor the effectiveness of decontamination. The CAM responds to nerve and mustard agent vapors down to the lowest hazard that could affect personnel over a short period.”<sup>60</sup> The ICAM is designed to be a monitor of the presence of chemical warfare agents located in close vicinity and located in front of the items inlet nozzle. While the equipment has the ability to detect the presence of both nerve (G-series) and blister (H-series) chemical warfare agents, it is only capable of detecting the presence of one type of agent at a time. During a CBRN mission, it is common to utilize two of these items at the same time, each set to a specific mode (one to H series, one to G-series). These limitations of this equipment, similar to those of the

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<sup>60</sup>Headquarters, Department of the Army, Technical Manual 11-6665-343-10, *Technical Manual Operator’s and Unit Maintenance Manual for Improved Chemical Agent Monitor* (Arlington, VA: Government Printing Office, 9 June 1998), 1-1.

M22, make it useful in specific situations, but the ICAM is limited in capacity to be effective during the WMD elimination mission.

The Radiac set A/N VDR-2 is a radiological detection item that can detect the presence of radiological material. “Used to locate and measure radioactivity in the form of gamma rays and beta particles. Displays dose rates and total accumulated dose resulting from a fallout field.”<sup>61</sup> The A/N VDR-2 can provide information regarding the presence of radiological material emitting gamma and beta energy and provide the current dose, and dose rate of radioactive energy. The equipment is not able to identify the presence of alpha radiation and it also unable to identify the radioisotope present. While just being aware of the presence of radiation can be useful, this equipment is lacking in capacity to provide all elements of information that other items of equipment can provide. This limitation makes the A/N VDR-2 an item of equipment that is not commonly used during the conduct of a WMD elimination mission.

The A/N PDR-75 analyzes data collected from individual dosimeters (DT-236) and provides data regarding the total does of gamma and neutron radioactive energy received by the individual wearing the individual dosimeter. “The PDR-75 is used to calculate unit radiation status; for medical triage and for unit reconstitution.”<sup>62</sup> The PDR-75 can be useful during the WMD elimination mission because it can provide the total

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<sup>61</sup>Headquarters, Department of the Army, Technical Manual 11-6665-251-20, *Technical Manual Operator’s and Unit Maintenance Manual for Radiac Set AN/VDR-2* (Arlington, VA: Government Printing Office, 9 June 1998), 1-1.

<sup>62</sup>Chemical, Biological, Radiological and Nuclear Information Resource Center, “Fact sheet for Radiac set AN/PDR-75,” <https://jacks.jpeocbd.army.mil/Jacks/Protected/Core/Secure/Equipment/Summary/Default.aspx?niin=012114217> (accessed 31 March 2012).

dose of radiation received by an individual. This capability is useful in determining the ability of a unit to continue with the conduct of a mission based on a radiological threat. However, this item does not provide real time data and requires that the individual dosimeter is placed in the readers in order to determine the total dose. In areas of high radiation activity this item would have limited effectiveness.

The A/N PDR-77 is “used for nuclear weapons accident response, environmental level measurement of radiological materials and in monitoring work areas where chemical detectors are stored”<sup>63</sup> This equipment has the capacity to detect all types of radiation, although the item can only detect one type of radiation at a time (based on the use of different detection attachments) and the item can only confirm the presence of radioactive material but cannot provide the radioisotope information. While this item has more capability than the A/N VDR-2; it is still limited in capability to be effective during the WMD elimination mission.

“The A/N UDR 13 is a compact, hand-held or pocket carried tactical dosimeter capable of measuring prompt gamma/neutron dose from a nuclear event plus gamma dose and does rate from nuclear fallout”<sup>64</sup> The A/N UDR 13 faces some of the same limitations of the other radiation equipment analyzed within this section; although it can provide the dose and dose rate of both gamma and neutron radiation at the same time it is

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<sup>63</sup>Chemical, Biological, Radiological and Nuclear Information Resource Center, “Fact sheet for Radiac set AN/PDR-77,” <https://jacks.jpeocbd.army.mil/Jacks/Protected/Core/Secure/Equipment/Summary/Default.aspx?productId=388> (accessed 31 March 2012).

<sup>64</sup>Chemical, Biological, Radiological and Nuclear Information Resource Center, “Fact sheet for Radiac set AN/UDR-13,” <https://jacks.jpeocbd.army.mil/Jacks/Protected/Core/Secure/Equipment/Summary/Default.aspx?productId=389> (accessed 31 March 2012).

unable to identify the type of radioisotope involved. This dosimeter has use in the conduct of the WMD elimination mission based on the rugged design and small size.

Generally, the MTOE equipment items are designed for use in a tactical combat environment. They have met the specifications dictated by the United States Army for this purpose, these design specifications assist in the items survivability on the battlefield, however the MTOE equipment of the CRT and SFCRD have limited capacity for use when conducting the technical elements of the WMD elimination mission because of their limited ability to provide information regarding the type of chemical, biological, radiological or nuclear element or substance that is present.

The technical nature of the WMD elimination mission necessitates the use of specialized items of equipment that are procured directly from manufacturers. The COTS items have not been subjected to the same testing that is required for military standard equipment. This lack of testing can have impacts to the durability of the items, however, many of the items utilized for the WMD elimination mission provide better fidelity of data than the military standard equipment.

The CRT and CRD both utilize a varied array of COTS equipment; and given the similarities in capability and mission, both units utilize some of the same COTS equipment. These items include the Ahura First Defender, Rae Systems MultiRAE gas monitor system, and Smiths Detection HAZMATID. The use of these similar items allows these elements, an increased ability to operate together.

The Ahura First defender, designed and manufactured by Ahura Scientific, “Quickly identifies unknown solid and liquid chemicals from a vast sample library including: explosives, toxic industrial chemicals (TICs), toxic industrial materials

(TIMs), chemical warfare agents (CWAs) white powders, narcotics”<sup>65</sup> The first defender is able to provide on-site presumptive analysis of unknown substances, which can be a great asset during the conduct of the WMD elimination mission. The First Defender is ruggedized to withstand use in a combat environment, and is small enough to be transported by an individual Soldier. The main draw back of the first defender is, based on the type of technology it utilizes, it is unable to analyze dark substances and can cause darker substances to combust and create a significant hazard. Despite this drawback, based on the portability and capability of this item it is well suited to the WMD elimination mission.

When entering a location in an unknown environment, it is essential to be able to monitor the levels of gas in the atmosphere. “The MultiRAE plus combines a PID (photo ionization detector) with the standard four gases of a confined space monitor (O<sub>2</sub>, LEL, and two toxic gas sensors) in one compact monitor with sampling pump.”<sup>66</sup> This capability allows the CRT and SFCRD the ability to determine the appropriate protective equipment to utilize during their operations. This determination is important when dealing with dangerous unknown substances. The MultiRAE is vital to the CRT and SFCRD and their ability to support the WMD elimination operation.

The CRT and SFCRD are able to provide presumptive analysis of unknown substances through the use of the Smiths Detection HAZMAT ID. The HAZMAT ID utilizes infra-red light in order to provide information regarding numerous unknown

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<sup>65</sup>Thermo Scientific, “AhuraFD,” <http://www.ahurascientific.com/chemical-explosives-id/products/ahurafd/index.php#> (accessed 31 March 2012).

<sup>66</sup>RAE Systems, “MultiRAE Plus,” <http://www.raesystems.com/products/multirae-plus> (accessed 5 April 2012).

substances. This capability is important to the WMD elimination mission. The only drawback of the HAZMAT ID could be the size, however it is far smaller than other items with similar capability. This equipment is ruggedized and the interface is very user friendly. The HAZMAT ID provides the SFCRD with essential capability during the conduct of the WMD elimination mission.

The CRT brings a unique capability to both locate and characterize CBRN threats, but to also conduct render safe procedures as well. These missions require specialized equipment in order to provide protection to the personnel conducting the mission and increased fidelity to commanders in their decision cycle. These items include the Dtect Rad-ID radiological detection system, the Exploranium GR-135 Identifinder radiological detection system, the Inficon HAPSITE chemical identification system, the Pragmatic HazCam wireless video camera system, and the RAZOR EX biological detection system.<sup>67</sup>

The main capability gap between the MTOE radiac detection systems and the COTS radiation detection systems is the MTOE equipments inability to determine the type of radioisotope present, and the inability to detect multiple types of radiation simultaneously. The Dtect Rad-ID and the Exploranium GR-135 Identifinder radiological detection devices provide the CRT with the capability to detect, identify and locate radiological sources or any material emitting a radiological signature. The ability to locate radiological items is essential when time is crucial to the conduct of a WMD elimination mission. The ability to identify multiple types of radiation on target allows

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<sup>67</sup>48th CBRN Brigade, "CBRNE Response Team (CRT) Equipment List" (Handout, Fort Hood, Texas, 22 February 2012).

the CRT to characterize the site quickly and accurately. Both items of equipment are ruggedized to withstand continued use on the battlefield, and harsh decontamination procedures.<sup>68</sup>

The ability to not only detect the presence of, but to identify unknown chemical substances assists in the characterization of unknown sites during the conduct of the WMD elimination mission. The Inficon HAPSITE, utilized by the CRT, provides the ability to “detect, identify and quantify toxic industrial chemicals and chemical warfare agents on-site. HAPSITE Smart Plus is the only person portable gas chromatograph/mass spectrometer”<sup>69</sup> Unlike the MTOE equipment, this item provides the CRT the capability to detect and identify most unknown substances they may encounter. This equipment utilizes information from the National Institute for Occupational Health and Safety (NIOSH) guide to provide the CRT with exact information regarding the unknown substance they have encountered. This capability provides a significant increase in force protection to units conducting WMD elimination missions. However, this equipment is highly sensitive to environmental conditions, and is not ruggedized for use in a field environment. This limitation must be considered when utilizing this equipment.

The ability to detect hazards without having to risk personnel or equipment allows the CRT to posture itself to meet whatever threat it may encounter. This task is accomplished through the use of the Pragmatic HAZCAM which can “monitor chemical,

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<sup>68</sup>Science Applications International Corporation, “Exploranium GR-135 Plus Identifinder,” <http://www.saic.com/products/security/gr-135/> (accessed 4 April 2012); Dtect Systems, “rad-ID,” [http://www.dtectsystems.com/rad-ID\\_page.html](http://www.dtectsystems.com/rad-ID_page.html) (accessed 4 April 2012).

<sup>69</sup>Inficon, “HAPSITE Smart Plus,” <http://www.inficonemergencyresponse.com/en/hapsitesmart/index.html> (accessed 4 April 2012).

biological or other hazardous situations with a remote camera”<sup>70</sup> The CRT can allow additional standoff between themselves and any hazard they may encounter. This system also provides the CRT an increased capability to conduct site characterization on sites in uncertain environments without the risk to team members. While this standoff will allow for increased force protection, the employment and set up of this item is time consuming and this must be accounted for when functioning in uncertain environments.

The detection and identification of biological agents in a field environment can be extremely difficult and is inhibited by the need for not only specialized equipment but specialized storage requirements. The CRT brings the unique capability to conduct field detection and identification of biological agents through the use of the RAZOR EX biological detection system. “It is a field PCR (polymerase chain reaction) unit that is fast, with ultra-reliable DNA based results”<sup>71</sup> MTOE equipment for biological detection typically involves multiple vehicles and fixed site capability,<sup>72</sup> the ability to detect and identify biological agents in the field with a relatively small item of equipment significantly increases the capability to the CRT in the conduct of the WMD elimination mission.

Based on their size and mission to support special operations forces, the SFCRD utilizes various specialized COTS items, with similar capability as the CRT, including the

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<sup>70</sup>Pragmatic, “HazCam: High performance wireless video camera system for Homeland Security and HazMat applications,” [www.pragmatic1.com/HazCam.pdf](http://www.pragmatic1.com/HazCam.pdf) (accessed 4 April 2012).

<sup>71</sup>Idaho Technical, “RAZOR EX BioDetection System,” <http://www.idaho.tech.com/RAZOREX/index.html> (accessed 4 April 2012).

<sup>72</sup>Federation of American Scientists, “M31E1 Biological Integrated Detection System,” <http://www.fas.org/man/dod-101/sys/land/bids.htm> (accessed 6 April 2012).

Canberra InSpector 1000 radiological detection system, ReconScout surveillance robot, and Smiths Detection Sabre 4000.<sup>73</sup> These items are in addition to the items already discussed that both elements utilize in the conduct of the WMD elimination mission.

The SFCRD utilizes the Canberra InSpector 1000 to detect and identify radioactive isotopes. Similar in capability to the CRT GR-135 Identifinder and Rad-ID, the InSpector 1000 features “simple, real time isotope identification and classification”<sup>74</sup> This item is ruggedized, although not to the same standards as the military standard equipment, despite this the equipment provides excellent capability and capacity for use in the WMD elimination mission. The ability to not only identify the presence of radioisotopes, but to classify the type of radioisotope present is essential in the conduct of the WMD elimination mission.

While the CRT utilizes specific robots for the conduct of their mission, the SFCRD utilizes the Recon Scout surveillance robot in the conduct of their operations. This item is extremely small and can be thrown into an area to provide real time data and specific information about the configuration and position of items within an unknown space.<sup>75</sup> Since the SFCRD has the ability to conduct operations within uncertain and

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<sup>73</sup>112th Chemical Reconnaissance Detachment, 1st Special Forces Group (Airborne), “112th CBRN Reconnaissance Decontamination Detachment” (Briefing slides, Joint Base Lewis-McChord, Washington, 1st Special Forces Group (Airborne), 7 December 2011).

<sup>74</sup>Canberra, “InSpector 1000 Digital Hand-Held Multichannel Analyzer,” <http://www.canberra.com/products/1157.asp> (accessed 31 March 2012).

<sup>75</sup>Recon Robotics, “Recon Scout IR,” [http://www.reconrobotics.com/products/Military\\_recon-scout\\_IR.cfm](http://www.reconrobotics.com/products/Military_recon-scout_IR.cfm) (accessed 6 April 2012).

hostile environments, this design of robot can provide essential information to the SFCRD prior to conducting operations.

The WMD elimination mission can create the need to detect and identify not only chemical warfare agents, but explosives and narcotics. The Smiths Detection Sabre 4000 is designed to not only detect and identify chemical warfare agents, but trace amounts of explosives and narcotics. This capability is essential to the security of the SFCRD teams conducting operations, including WMD elimination operations. The Sabre 4000 is able to “detect threats from explosives, chemical warfare agents, toxic industrial chemicals or narcotics”<sup>76</sup> The major drawback of this item of equipment is, due to the sensitive nature of the detection system, the equipment can be difficult to use in combat environments. The equipment is useful for the conduct of the WMD elimination mission, but the user must be aware of the equipments environmental sensitivity.

The table below outlines the capabilities of both the MTOE and COTS equipment utilized by the CRT and SFCRD. The “operational capability” refers to type of hazard that the item of equipment is designed to detect; these categories include chemical, biological, radiological, vapor, explosive and narcotic. Nuclear is included under the category of radiological. The “operational capacity” refers to the ability of the equipment to detect and identify agents one at a time (single) or simultaneously (multiple). The category of “specificity” refers to the ability of the equipment to “detect” which means provide information of the presence of a hazard, or “detect and identify” which refers to the capability to both detect a hazard and identify the hazard itself. Throughout

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<sup>76</sup>Smith’s Detection, “Sabre 4000 Hand-Held Trace Detector for Explosives, Chemical Agents, Toxic Industrial Chemical Agents or Narcotics,” [http://www.smithsdetection.com/SABRE\\_4000.php](http://www.smithsdetection.com/SABRE_4000.php) (accessed 31 March 2012).

conducting the evaluation of this equipment one criteria that has been used is the ability of the equipment to operate under harsh conditions. The “survivability” of the items is categorized as “ruggedized” or meeting the specifications set forth by the United States Army, “semi-ruggedized” which means the equipment has been designed to withstand harsh conditions but does not necessarily meet United States Army specifications or “non-ruggedized” which means the item is not designed to operate in harsh conditions.

Unique to the design of the CRT is the organic capacity to conduct CBRN detection and identification utilizing the specialized equipment previously discussed, and to conduct render safe procedures which are defined as “The portion of the explosive ordnance disposal procedures involving the application of special explosive ordnance disposal methods and tools to provide for the interruption of functions or separation of essential components of unexploded explosive ordnance to prevent an unacceptable detonation.”<sup>77</sup> These procedures are highly technical and dangerous to conduct. Based on these requirements the EOD personnel assigned to the CRT utilize multiple items of COTS equipment the ORTEC Portable Isotopic Neutron-Spectroscopy Chemical Assay System (PINS), RTR-4 Portable Digital X-ray system, QinetiQ Talon robots and Yxlon X-ray system are just a few of these such items.

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<sup>77</sup>Joint Staff, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Arlington, VA: Government Printing Office, November 2010), 123.

Table 2. Capability of CBRN Detection Equipment

Type	Equipment Name	Operational Capability	Operational Capacity	Specificity	Survivability
MTOE	Alarm Chemical Agent Automatic M22	Chemical	Single Agent	Detect Only	Ruggedized
MTOE	Improved Chemical Agent Monitor	Chemical	Single Agent	Detect Only	Ruggedized
COTS	Ahura First Defender	Chemical	Multiple Agent	Detect and Identify	Semi-Ruggedized
COTS	Smiths HAZMAT ID	Chemical	Multiple Agent	Detect and Identify	Semi-Ruggedized
COTS	RAE Systems MultiRAE	Vapor	Multiple Vapor	Detect and Identify	Semi-Ruggedized
COTS	Inficon HAPSITE	Chemical	Multiple Agent	Detect and Identify	Non-Ruggedized
COTS	Pragmatic HAZCAM	Chemical /Biological	Multiple Agent	Detect and Identify	Semi-Ruggedized
COTS	RAZOR EX	Biological	Single Agent	Detect and Identify	Non-Ruggedized
MTOE	AN/VDR-2	Radiological	Single Type	Detect Only	Ruggedized
MTOE	A/N PDR-75	Radiological	Total Dose	Total Dose Only	Ruggedized
MTOE	AN PDR-77	Radiological	Single Type	Detect only	Ruggedized
MTOE	A/N UDR-13	Radiological	Total Dose	Dose Rate/Total Dose Only	Ruggedized
COTS	DTECT RAD-ID	Radiological	Multiple Types	Detect and Identify	Semi-Ruggedized
COTS	Exploranium GR-135 Identifinder	Radiological	Multiple Types	Detect and Identify	Semi-Ruggedized
COTS	Canberra Inspector 1000	Radiological	Multiple Types	Detect and Identify	Semi-Ruggedized
COTS	Smiths Sabre 4000	Chemical/ Explosive/ Narcotic	Multiple Agent	Detect and Identify	Non-Ruggedized

Source: Created by author.

A portable x-ray system allows EOD personnel the ability to identify the internal components of an explosive device without the need to handle the device. This capability is important because of the ability to “evaluate objects from a safe distance and identify the best method for disposal”<sup>78</sup> The RTR-4 and Yxlon systems provide this capability to the CRT. This capability significantly limits the amount of risk the CRT is exposed to during operations.

The Portable Isotopic Neutron-Spectroscopy Chemical Assay System provides information to the CRT personnel regarding the chemical composition of the contents of an item. “Its purpose is non-nuclear identification of chemical composition”<sup>79</sup> This equipment has the ability to conduct analysis of unknown substances within unexploded ordinance that cannot be seen on an x-ray. This capability allows the CRT to determine the disposal requirements for potential CBRN munitions without having to conduct sampling of the item, thus decreasing the risk to the CRT.

The QinetiQ Talon Robot and iRobot PACBOT 510 are designed to allow the CRT increased standoff distance, while still conducting the render safe procedure. These items of equipment utilize various cameras and onboard capabilities to operate close to unexploded ordinance without the risk of personnel. During the conduct of WMD elimination operations, these robots can be outfitted with CBRN detectors in order to assist with site characterization.

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<sup>78</sup>Science Applications International Corporation, “RTR-4 Portable Digital X-ray,” <http://www.saic.com/products/security/rtr4n/rtr4.html> (accessed 4 April 2012).

<sup>79</sup>ORTEC, “miniPINS: Portable Isotopic Neutron-Spectroscopy Chemical Assay System,” [www.inl.gov/research/portable-isotopic-neutron-spectroscopy-system](http://www.inl.gov/research/portable-isotopic-neutron-spectroscopy-system) (accessed 4 April 2012).

The COTS equipment utilized by the CRT and SFCRD for the WMD elimination mission is highly sensitive and can provide on-site information regarding unknown chemical, radiological and nuclear substances. This equipment provides an increase in capability over the use of only the MTOE equipment, although the COTS equipments environmental sensitivities must be considered when employing the CRT and SFCRD. The use of this equipment together, both the MTOE equipment and the COTS, provides the CRT and SFCRD the capability to conduct the technical aspects, including locating and characterizing WMD locations, of the WMD elimination mission.

### Conclusion

The doctrine, organization, and material utilized by the United States Army CBRN corps in the conduct of the WMD elimination mission is key to analyzing the capability to conduct the WMD elimination operation. This study found that the doctrine regarding the conduct of the WMD elimination mission completely addresses the mission. The organization, training and materials are working to meet the requirements of this doctrine. The conclusions of this study will be addressed in the following chapter.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

#### Purpose of Research

The magnitude of a WMD terrorist attack against the United States is unknown, while physical destruction can be mitigated, the psychological damage to the American public would be immeasurable. The significant nature of these threats is addressed in all of the national strategic guidance and documents, from the national security strategy to specific strategy documents designed to address the WMD threat faced by the United States. The current threat from non-state actors and their ability to utilize WMD make it necessary for the United States military to assume a posture to defend the homeland against such an attack. The United States Army maintains a specific capability to conduct both CBRN defense and consequence management.

This study was designed to answer the primary research question: How much of the United States Army CBRN force structure is managed or maintained to counter the WMD threat? The study utilized a design based on a qualitative narrative method utilizing the DOTMLPF model, and based on the qualitative narrative nature of the study addressed the doctrine, organization, and material necessary to conduct the specific mission of WMD elimination. This study was to address the capability of the United States Army CBRN corps to conduct the WMD elimination mission. Through the use of this type of research design certain conclusions can be reached.

## Conclusions

The United States Army CBRN corps is moving away from the passive defense posture to an active defense posture. In order to make this change it is necessary for the CBRN corps to analyze the internal capability to conduct the missions necessary to take on this new posture. One of the mission sets included in the active defense posture is that of WMD elimination. If the United States military is able to prevent an adversary from obtaining WMD then they will be unable to utilize it against United States interest at home and abroad. The WMD elimination mission plays a key role in the security and defense of the United States.

The previous chapter analyzed the doctrine, organization and material utilized to conduct the WMD elimination mission. This study found that the doctrine to be complete, however not completely feasible. The doctrine adequately covers the topic, however the organizations capable of conducting WMD elimination do not have the capacity to conduct WMD elimination on a large scale. The organization of the CBRN corps must be redesigned to fully take on this type of mission. The MTOE equipment that is utilized during the WMD elimination mission, while capable of functioning properly in a field environment, is inadequate for the mission. The COTS equipment that is fielded for the conduct of the WMD elimination mission is capable of providing the necessary information, however it is not ruggedized for use in a field environment. In order to conduct the WMD elimination mission the United States Army CBRN corps must be designed for such a mission, and the material that it utilized needs to be designed in such a way that it will function properly in a field environment.

The CBRN corps does have the capability to conduct certain aspects of the WMD elimination mission. Specialized units, specifically the CRT and CRD, both addressed in this study, are capable of conducting the technical aspects (confirm/deny, site characterization, and site exploitation) of the WMD elimination mission, however they are unable to conduct the WMD elimination mission unilaterally. This conclusion is reached based on the size and defensive capability of each of these units. The smaller size makes the conduct of security operations difficult and the CRT or CRD will need support in order to secure WMD sites in order to conduct full exploitation. The second issue regarding the CBRN corps ability to conduct WMD elimination missions is one of capacity. The CBRN corps has a limited number of units capable of conducting WMD elimination operations, and is therefore limited in the number of WMD elimination operations that the corps can support at any one time.

In order to fully address the threat of WMD, it is necessary for potential adversary WMD sites and capability to be included in the targeting cycle. Inclusion of WMD sites and capability on a Joint Prioritized Target List (JPTL) will ensure they are resourced and executed as necessary. The JTF-E headquarters must ensure that WMD targets are included in the higher headquarters JPTL, this will also ensure that the necessary technical assets are properly allocated to each target.

### Recommendations

Some of these limitations can be overcome with a change in the structure of the United States Army CBRN corps. The historical structure of the corps is based on threats of the past, and while the United States Army CBRN corps has been attempting to change the focus from a passive defensive posture to an active one, a force design update is

needed. The United States Army CBRN corps must maintain the capability to conduct CBRN consequence management and active defensive missions including WMD elimination. These two mission sets should be the primary focus of the future United States Army CBRN corps.

This study has concluded that the ideal structure of the United States Army CBRN corps is one where the United States Army CBRN corps increases the capability to conduct WMD elimination operations by changing the task organization of the Technical escort battalions by adding one additional technical escort company to each existing battalion, thus increasing the number of CRTs from twenty four to thirty two. The capacity of the SFCRD must be increased as well to completely address the WMD elimination mission. The SFCRD should be changed from an eighteen Soldier detachment to a thirty two soldier detachment, thus doubling the number of teams capable of supporting the WMD elimination mission. In order to be fully capable of conducting the WMD elimination mission, it is also necessary to assign EOD personnel to the SFCRD. This will enable the CRD to conduct render safe procedures and make them a more viable asset on the battlefield. This increase in capacity will allow the United States Army CBRN corps to focus itself against the threats of the future.

In order to fully study the necessary type of structure the United States Army CBRN corps should have it is essential to analyze their current capability to conduct each of the eight missions highlighted in the *NMSCWMD*. This type of study is needed for the remaining mission sets, specifically the mission of WMD interdiction and WMD consequence management. These two missions play a key role in the future operations of the United States Army CBRN corps. The design of this study can be utilized in the same

manner to deduce the United States Army CBRN corps capability to conduct these specific missions.

While the design of this study will adequately address the capability of the United States Army CBRN corps according to qualitative narrative data, to get a better sense of the capability of the corps it would be ideal to conduct a quantitative assessment of the United States Army CBRN corps capability to conduct WMD related missions. This additional aspect to the research design would allow the research to address the elements of DOTMLPF not discussed in this study. These addition of the elements of training, leadership, personnel and facilities would be difficult utilizing the design of this study.

The United States national strategy documents that drive the direction of our country highlight the threat posed by WMD and the magnitude of this threat is not to be taken lightly. The United States Army CBRN corps was established to combat the threat of these types of weapons, and as we move to the future the United States Army CBRN corps unique capability is more necessary than it has been in the past. The United States Army CBRN corps is the ideal United States Army unit to assist with the conduct of missions to eliminate WMD, however the structure and direction of the United States Army CBRN corps must be changed in order to meet this and threats of the future.

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