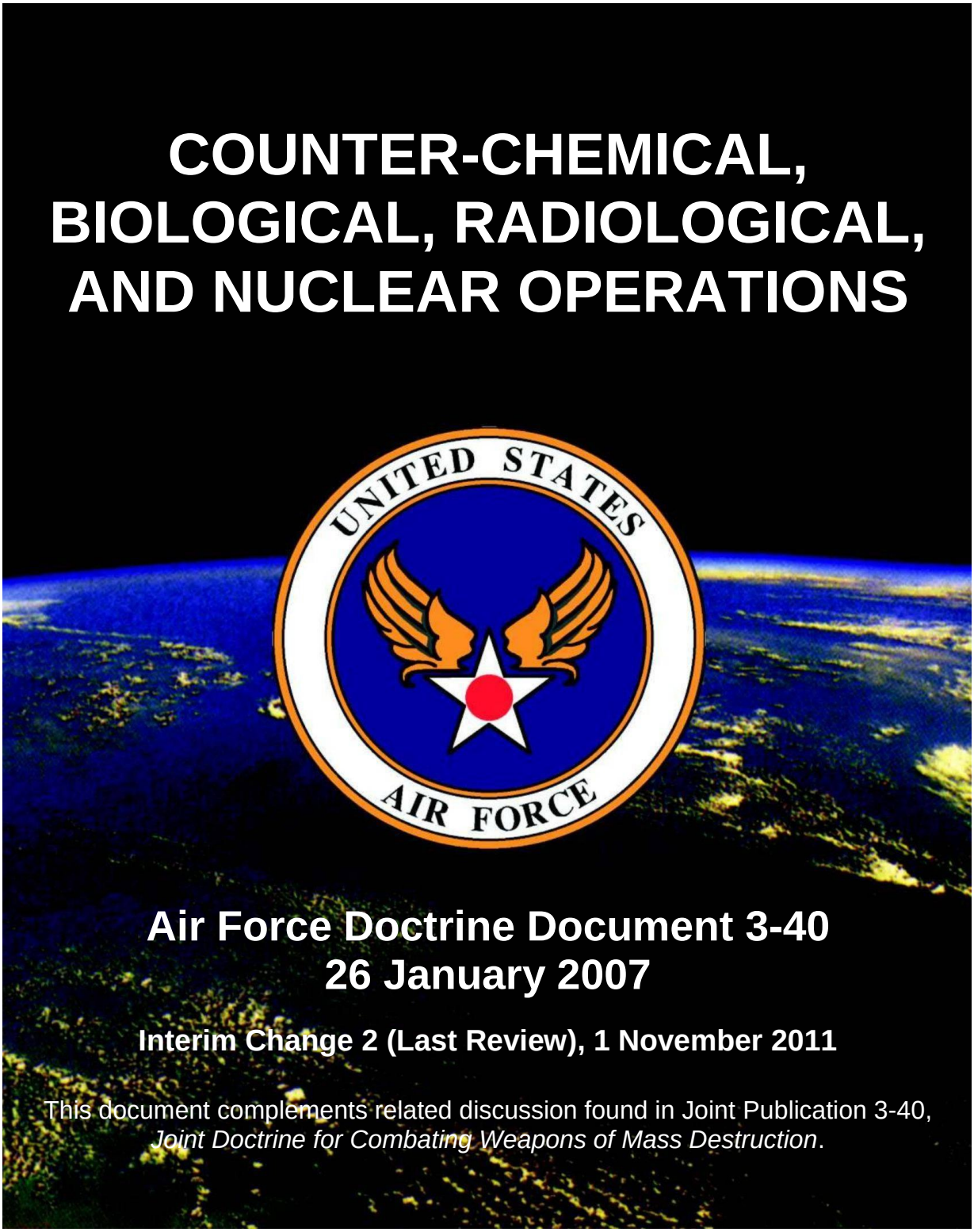
COUNTER-CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR OPERATIONS



Air Force Doctrine Document 3-40
26 January 2007

Interim Change 2 (Last Review), 1 November 2011

This document complements related discussion found in Joint Publication 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction*.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE DOCTRINE DOCUMENT 3-40
26 JANUARY 2007
INCORPORATING INTERIM CHANGE 2, 1 NOVEMBER 2011

SUMMARY OF CHANGES

The Air Force Doctrine Working Group has reviewed this document and recommended that it remains valid and will again be reviewed no later than April 2013. The cover has been changed to AFDD 3-40, *Counter-Chemical, Biological, Radiological, and Nuclear Operations* to reflect revised AFI 10-1301, Air Force Doctrine (9 August 2010). AFDD numbering has changed to correspond with the joint doctrine publication numbering architecture. AFDD titles and content remain unchanged until updated in the next full revision. A margin bar indicates newly revised material.

Old Number	New Number	Title
AFDD 2-1	changed to AFDD 3-1	*Air Warfare*
AFDD 2-1.1	changed to AFDD 3-01	Counterair Operations
AFDD 2-1.2	changed to AFDD 3-70	Strategic Attack
AFDD 2-1.3	changed to AFDD 3-03	Counterland Operations
AFDD 2-1.4	changed to AFDD 3-04	Countersea Operations
AFDD 2-1.6	changed to AFDD 3-50	Personnel Recovery Operations
AFDD 2-1.7	changed to AFDD 3-52	Airspace Control
AFDD 2-1.8	changed to AFDD 3-40	Counter-CBRN
AFDD 2-1.9	changed to AFDD 3-60	Targeting
AFDD 2-10	changed to AFDD 3-27	Homeland Operations
AFDD 2-12	changed to AFDD 3-72	Nuclear Operations
AFDD 2-2	changed to AFDD 3-14	Space Operations
AFDD 2-2.1	changed to AFDD 3-14.1	Counterspace Operations
AFDD 2-3	changed to AFDD 3-24	Irregular Warfare
AFDD 2-3.1	changed to AFDD 3-22	Foreign Internal Defense
AFDD 2-4	changed to AFDD 4-0	Combat Support
AFDD 2-4.1	changed to AFDD 3-10	Force Protection
AFDD 2-4.2	changed to AFDD 4-02	Health Services
AFDD 2-4.4	changed to AFDD 4-11	Bases, Infrastructure… [Rescinded]
AFDD 2-4.5	changed to AFDD 1-04	Legal Support
AFDD 2-5	changed to AFDD 3-13	Information Operations
AFDD 2-5.1	changed to AFDD 3-13.1	Electronic Warfare
AFDD 2-5.3	changed to AFDD 3-61	Public Affairs Operations
AFDD 2-6	changed to AFDD 3-17	Air Mobility Operations
AFDD 2-7	changed to AFDD 3-05	Special Operations
AFDD 2-8	changed to AFDD 6-0	Command and Control
AFDD 2-9	changed to AFDD 2-0	ISR Operations
AFDD 2-9.1	changed to AFDD 3-59	Weather Operations

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FOREWORD

The threat or use of chemical, biological, radiological, or nuclear weapons by hostile regimes and terrorists represents one of the most difficult challenges facing our nation and our Air Force. This challenge is further complicated by the advance of technologies used to develop and deliver these weapons, making it possible for our enemies to attack us at a time and place of their choosing, with little or no warning. Success in defending our nation, our military forces, and partners and allies depends on how effectively we apply air, space, and cyberspace power to counter this threat.

Many of our adversaries are actively seeking or already possess weapons of mass destruction and have stated their willingness to employ them. The key to successful protection against this threat is our people and their dedication to this vital mission. This doctrine document describes the Air Force's role in countering the threat or use of chemical, biological, radiological, and nuclear weapons at the operational level of war. Our Air Force has tremendous capability available to address this challenge. We now use five pillars to describe how to counter these weapons: proliferation prevention, counterforce, active defense, passive defense, and consequence management. This doctrine document provides guidance for understanding, planning, and executing counter-chemical, biological, radiological, and nuclear operations to enable US forces to survive and operate effectively in this deadly environment.

ALLEN G. PECK
Major General, USAF
Commander, Headquarters
Air Force Doctrine Center

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The gravest danger our nation faces lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction, and evidence indicates they are doing so with determination. The United States will not allow these efforts to succeed…History will judge harshly those who saw this coming danger but failed to act. In the new world we have entered, the only path to peace and security is the path of action.

—President George W. Bush
September 17, 2002

INTRODUCTION

PURPOSE

Air Force commanders and personnel must be able to prevent an attack of chemical, biological, radiological, and nuclear weapons and be able to counter the resulting effects if such weapons are used. Air Force procedures and training must be developed with joint operations in mind. Airmen must understand how to organize Air Force forces and how to present them to the joint force commander to ensure safety and survivability for all personnel while ensuring mission accomplishment. This Air Force doctrine document details principles for conducting counter-chemical, biological, radiological, and nuclear operations.

APPLICATION

This AFDD applies to the Total Force: all Air Force military and civilian personnel, including regular, Air Force Reserve, and Air National Guard units and members. Unless specifically stated otherwise, Air Force doctrine applies to the full range of military operations.

The doctrine in this document is authoritative, but not directive. Therefore, commanders need to consider the contents of this AFDD and the particular situation when accomplishing their missions. Airmen should read it, discuss it, and practice it.

SCOPE

This document expands the doctrine for combating chemical, biological, radiological and nuclear weapons. The doctrine reflects guidance outlined in the 2006 National Military Strategy to Combat Weapons of Mass Destruction and addresses a broad range of capabilities to combat these weapons, including the ability to preemptively strike a suspected enemy target to prevent or preempt a chemical, biological, radiological, or nuclear attack. Finally, the doctrine details the consequence management stage of operations and discusses critical command relationships, support operations, and education and training.

COMAFFOR / JFACC / CFACC
A note on terminology

One of the cornerstones of Air Force doctrine is that "the US Air Force prefers - and in fact, plans and trains - to employ through a commander, Air Force forces (COMAFFOR) who is also dual-hatted as a joint force air and space component commander (JFACC)." (AFDD 1)

To simplify the use of nomenclature, Air Force doctrine documents will assume the COMAFFOR is dual-hatted as the JFACC unless specifically stated otherwise. The term "COMAFFOR" refers to the Air Force Service component commander while the term "JFACC" refers to the joint component-level operational commander.

While both joint and Air Force doctrine state that one individual will normally be dual-hatted as COMAFFOR and JFACC, the two responsibilities are different, and should be executed through different staffs.

Normally, the COMAFFOR function executes operational control/ administrative control of assigned and attached Air Force forces through a Service A-staff while the JFACC function executes tactical control of joint air and space component forces through an air and space operations center (AOC).

When multinational operations are involved, the JFACC becomes a combined force air and space component commander (CFACC). Likewise, the air and space operations center, though commonly referred to as an AOC, in joint or combined operations is correctly known as a Joint AOC (JAOC) or Combined AOC (CAOC).

FOUNDATIONAL DOCTRINE STATEMENTS

Foundational doctrine statements are the basic principles and beliefs upon which AFDDs are built. Other information in the AFDD expands on or supports these statements.

- The Air Force interlinked operational pillars of Counter-Chemical, Biological, Radiological, and Nuclear (C-CBRN) operations are proliferation prevention, counterforce, active defense, passive defense, and consequence management. (Page 2)

- Proliferation prevention operations are designed to restrict the spread of CBRN weapons and prevent adversary acquisition of CBRN materials and technology by supporting political, economic, military, and diplomatic efforts to discourage the pursuit and acquisition of weapons of mass destruction and deny proliferation by enabling interdiction of dangerous materials before they reach enemy hands. (Page 9)

- Counterforce refers to offensive operations to strike adversary CBRN weapons and associated production, transportation, and storage facilities prior to use. (Page 9)

- Active defense operations attempt to intercept CBRN weapons en route to their targets. (Page 10)

- Passive defense measures are designed to protect US and host nation installations and facilities, interests, points of embarkation and debarkation, critical infrastructure, equipment, and personnel from CBRN effects. Passive defense measures will enable sustained air and ground combat/combat support operations in a CBRN environment. (Page 10)

- Consequence management activities serve to reduce the effects of a CBRN attack or event, and assist in the restoration of essential operations and services at home and abroad in a permissive environment. (Page 10)

CHAPTER ONE

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR OPERATIONAL ENVIRONMENT

On September the 11th, 2001, America saw the destruction and grief terrorists could inflict with commercial airlines turned into weapons of mass murder. Those attacks revealed the depth of our enemies' determination, but not the extent of their ambitions. We know that the terrorists seek an even deadlier technology. And if they acquire chemical, biological or nuclear weapons, we have no doubt they will use them to cause even greater harm.

—President George W. Bush
White House Rose Garden
July 21, 2004

OVERVIEW

The proliferation of chemical, biological, radiological, and nuclear (CBRN) weapons and the methods to deliver them presents a serious security threat to US forces, allies, and interests around the world. Even limited numbers of CBRN weapons could inflict heavy casualties on military forces and civilian populations, degrade the effectiveness of US combat and combat support units, and counter US conventional military superiority. The use of CBRN weapons by an adversary could reduce the effectiveness of friendly forces and create serious political and psychological repercussions disproportionate to the physical impact on military operations.

The CBRN threat is characterized by the increasing availability of highly destructive technologies, a variety of weapons and means of delivery, and a wide range of adversaries. Potential adversaries who desire or possess CBRN weapons include both state and non-state actors. Non-state actors can include terrorist groups, transnational criminal organizations, or individuals operating independently. These adversaries may have the capability to threaten US and friendly forces both within and outside the homeland. Commanders must prepare to counter the threat or use of CBRN weapons.

Commanders should assess and plan for the effects of CBRN weapons across the full range of military operations. This requires an assessment of an adversary's capability and intent to employ CBRN weapons. It also requires commanders to consider and analyze the potential effects of CBRN weapons on US and friendly forces. The Air Force must prepare to counter the CBRN threat through planning, education, training, and close coordination with the other Services, US civilian government

organizations, allies, and coalition partners. A trained, equipped, and exercised force may deter an adversary from employing CBRN weapons.

Non-State Operational Capabilities

The terrorist attacks of 9/11 serve as examples of the global reach some non-state organizations possess. The ability of al Qaeda to plan, rehearse, pre-position personnel and equipment, and ultimately execute a string of coordinated attacks against the US demonstrated an effective operational capability. Similar operational capabilities could be applied to the use of WMD against the US and other international targets. The covert operational capabilities of al Qaeda and other terror organizations pose significant challenges for our detection and monitoring capabilities. State support – direct or indirect – provides these non-state actors an additional capability that is difficult to detect and monitor. In addition, al Qaeda leveraged bin Laden's personal fortune to plan and train to execute the 9/11 attacks. Additional funding support came from surrogates around the globe, often through numerous filters to hide the origin of the support. The combination of these capabilities positions al Qaeda to potentially acquire and/or develop and ultimately use WMD.

—Various Sources

Counter-CBRN (C-CBRN) operations are activities taken to detect, deter, disrupt, deny, or destroy an adversary's CBRN capabilities and to minimize the effects of an enemy CBRN attack. **The Air Force interlinked operational pillars of C-CBRN operations are proliferation prevention, counterforce, active defense, passive defense, and consequence management**. These operational-level pillars support the overarching guidance, in the form of military mission areas, provided in the *National Military Strategy to Combat Weapons of Mass Destruction (NMS-CWMD)*, and the operational pillars identified in Joint Publication (JP) 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction (WMD)* and the *National Strategy to Combat WMD*. Figure 1.1 (page 3) provides a visual depiction of the relationship between the various mission areas and operational pillars.

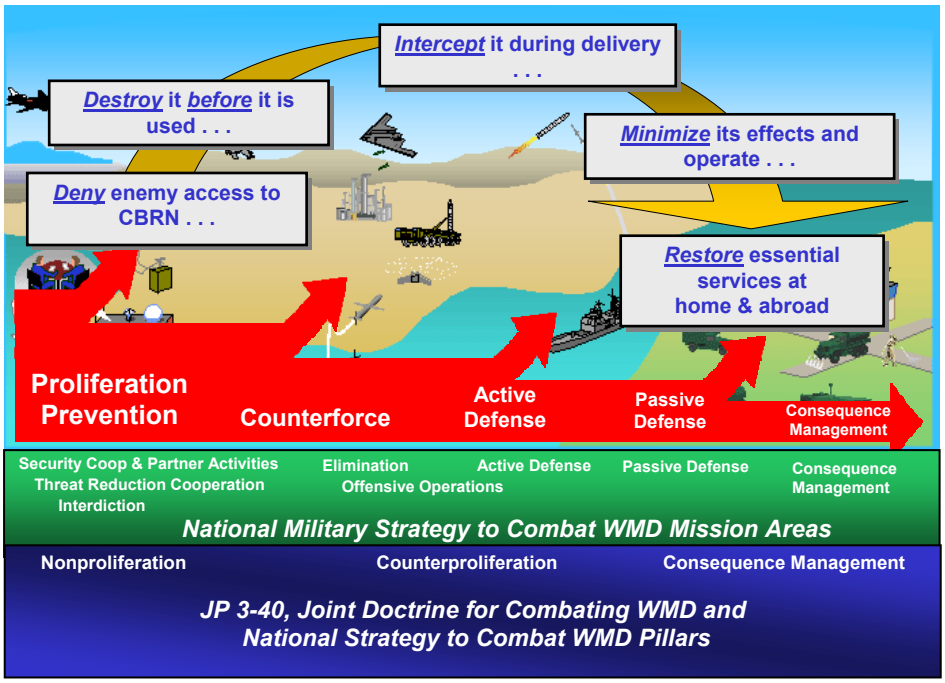


Figure 1.1. Air Force C-CBRN Operational Pillars in Relation to Joint and National Guidance

CBRN WEAPON CHARACTERISTICS

Commanders should be familiar with the characteristics of each CBRN element as not all CBRN attacks will have the same impact on operations. Different materials/agents have varying degrees of lethality, persistence, destructive capability, and psychological impact. Combinations of CBRN agents may present additional challenges for detection, protection, and treatment of casualties. Different delivery methods create varying concentrations, areas of contamination, and/or physical destruction. Additionally, weather conditions, terrain, and effectiveness of precautions taken all influence the resulting effects/severity of injuries on personnel and operations. The impacts from use of CBRN weapons can vary significantly across the spectrum of conflict, potentially leading to increased levels of protective posture that may be detrimental to mission operations tempo. Therefore, commanders may choose to reduce the level of protective posture, considering operational requirements and the nature of the threat, to accomplish the mission despite the hazards present.

Chemical

Chemical agents are defined as “chemical substance[s] intended for use in military operations to kill, seriously injure, or incapacitate a person through its physiological effects.” (Medical Aspects of Chemical and Biological Warfare, 1997). Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines a chemical agent as “any toxic chemical intended for use in military operations.” It is important to note that some chemical substances, while not

specifically designed for use as weapons in military operations, can be used quite effectively as attack agents. Toxic Industrial Chemicals (TICs), Toxic Industrial Materials (TIMs), and other potentially hazardous materials fall into this category.

Chemical weapons are categorized according to their physiological effects: choking, blister, blood, and nerve agents. Large quantities may be needed to achieve mass casualties, but even limited use can have devastating psychological effects sufficient for the adversary to achieve their objectives. While chemical weapons can be made in facilities designed specifically for that purpose, they can also be manufactured using dual use industries. Dual use technology and the small quantity required for a strategic effect make chemical weapons creation and capabilities extremely difficult to detect and assess.

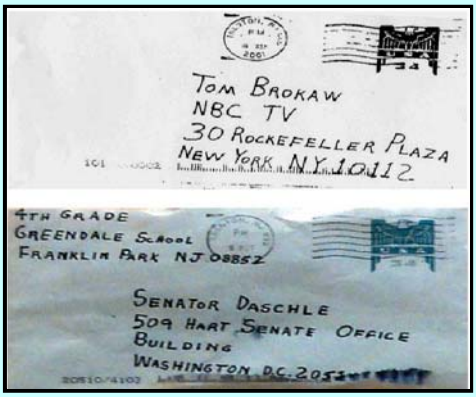
Nerve Agent Attack – Tokyo Subway

Shoko Asahara, founder of Japanese religious cult Aum Shinrikyo, orchestrated a politically-motivated chemical nerve agent attack on three Tokyo subway lines in March, 1995, killing 12 people and injuring…[1,000]… others. The post-attack investigation revealed the religious group had produced and used both sarin and VX nerve agents. Further investigation showed the cult was also responsible for two past biological attacks using botulinum toxin and anthrax and five chemical attacks using cyanide and sarin. All components necessary to produce these chemical and biological agents were legitimately obtained on the open market. Unfortunately, only small quantities of readily available materials are required to produce many deadly chemical and biological weapons for use by terrorists.

—The Biological and Chemical Warfare Threat, Revised Edition 1999, Central Intelligence Agency

Biological

Biological agents are capable of spreading disease to a target human population, livestock animals, or crops. Potentially pathogenic (disease-causing) microorganisms enter the body through the lungs, digestive tract, mucous membranes, and skin abrasions. Once established, the microorganisms can multiply, eventually overcoming the body's natural disease-fighting capabilities. Because an incubation period is normally required before effects become apparent, adversaries may release biological agents covertly prior to or early in a conflict, escape undetected, and avoid retaliation by plausibly denying having used prohibited weapons. Toxins, some of which can be synthetically produced, are poisonous byproducts of microorganisms, plants, and animals. They work by interfering with cell and tissue functions such as breathing or control of muscle functions. Biological weapons may be produced using small-scale, in-home techniques, or large-scale pharmaceutical or fermentation facilities. Thus, as with chemical weapons, biological weapon production and proliferation can be challenging to detect and even small amounts have potentially widespread effects.



Shortly after the terrorist attacks of September 11, 2001, letters containing anthrax spores were delivered to several media outlets in New York City and two senators in Washington, DC. Two of the letters contained highly refined, "weaponized" anthrax designed to cause the life-threatening inhalation form of anthrax. Several people, including postal workers at the facilities where the letters were processed and office workers at the letters' destinations, were infected. By the end of the crisis, twenty-two people developed anthrax infections, eleven of which were the inhalation variety. Five people died of inhalation anthrax. The perpetrator has never been caught.

—Various Sources

Radiological

Radiological materials that can create a hazard with the potential to injure and kill personnel can come from any radioactive source. While nuclear detonations produce large amounts of radioactivity and a significant hazard, radiological attacks do not create a nuclear blast. Radiological weapons could contain virtually any type of radioactive material and disperse only the amount of material originally contained within the device. Sources of radiological material include medical and industrial equipment and waste and may originate in countries having insufficient control of these materials.

A radiological dispersal device, which combines a radioactive substance with a dispersal mechanism, has the potential to contaminate a wide area and may be deployed clandestinely or overtly. One example of a radiological dispersal device, known commonly as a "dirty bomb," combines a radioactive substance with a conventional explosive in order to spread radiation over a given area. The extent of contamination is determined primarily by the amount and type of radioactive substance and explosive used. In such a weapon, the majority of casualties will be from direct results of the blast effects. Depending on the variables of type, amount, and size of the dispersal device and radiological material, radiation-based injuries (primarily long-term health effects such as cancer, and to a lesser degree, radiation sickness) could result. Dirty bombs are not the only means of weaponization, however. Other means may include aerosolization and contamination of water and food supplies. Non-dispersal weapons, commonly referred to as point sources or point emitters, can also create radiological effects. Any radiological weapon's effectiveness depends on the amount, type, and form of radioactive material used and its delivery mechanism. Physiological effects of radiation are calculated based on duration of exposure, distance from the

radioactive source, and the level of man-made and/or natural shielding. Although direct effects may be militarily minimal, the political and psychological effects could disrupt combat forces, negatively impact the US civil population psyche, and stress international partnerships.

Radiological threats differ from chemical and biological threats in several key aspects. Personnel may be harmed even if not in direct physical contact with a radiological source. Radiation cannot be “neutralized” or “sterilized” and many materials have half-lives measured in years. Radiation sickness is not contagious, but cross-contamination is a distinct possibility if proper tactics, techniques, and procedures (TTP) are not exercised. Respiratory protection will protect against the inhalation of airborne radiological contaminants. Individual Protective Equipment (IPE) or personal protective equipment (PPE) can provide the wearer with some protection against the contact and penetration effects of alpha and beta radiation, but do not provide significant gamma and neutron radiation protection.

Nuclear

The technologies involved with the development, production, and physical effects of nuclear weapons are well-known. The greatest difficulty in creating a weapon is acquiring enough fissile material—highly enriched uranium or plutonium, neither of which occurs in concentrated amounts in nature—to produce a device capable of a fission chain reaction.

Along with the devastating damage to personnel, equipment, and structures from blast, heat, and radiation effects, nuclear weapons can cause massive destruction and disruption to electronic infrastructure. When employed to optimize the electromagnetic pulse, a nuclear device will likely cause catastrophic effects to unshielded critical and vulnerable systems.

Delivery Methods

Delivery methods for CBRN weapons vary widely. Manned aircraft, ballistic missiles, and artillery have been used for decades. Newer delivery platforms, including cruise missiles and unmanned aircraft (UA), pose complex challenges to allied forces. Clandestine means of delivery also vary greatly and may include personnel, aerosol sprayers, land vehicles, watercraft, manned aircraft, or UAs.

Viable chemical agent delivery systems include artillery shells, rockets, improvised vehicle bombs, missiles, and other small-scale improvised dispersal methods. Aerosol forms can also be sprayed from aircraft, land vehicles, and ships. Biological pathogens can be spread in aerosol form and can also be used covertly to contaminate food and water supplies. Radiological materials may be spread by dispersal devices or from point sources, surface vehicles, or, potentially, by personnel (tactical nuclear devices).

OPERATIONAL RISK

Operational risk assessments consolidate and clarify issues so leaders are able

to make informed decisions. CBRN attacks can come from multiple sources utilizing a broad range of tactics, from clandestine operations to large-scale attacks. These attacks may be intended to cause psychological distress to hinder operations, deny the use of fixed sites such as airbases and staging areas, or inflict massive casualties and force withdrawal. Identifying the risk of CBRN attack requires a concerted intelligence effort. Operational risk assessments, based upon an understanding of potential adversary tactics, weapons capabilities, and delivery platforms, are essential for effective C-CBRN operations. The risk assessment is vital to determining mission requirements and priorities in the early stages of operations, and should be revisited throughout operations since the nature of the threat may change (refer to AFDD 2-4.1, *Force Protection*, for a more detailed discussion of risk assessment).

C-CBRN CONSTRUCT

Relationship to National Security Guidance and Joint Doctrine

The requirement to counter CBRN threats is prominent in US national security guidance. The *National Strategy to Combat Weapons of Mass Destruction* builds on the *National Security Strategy* and articulates a proactive and comprehensive strategy built upon three pillars of nonproliferation, counterproliferation, and consequence management. The *National Military Strategy to Combat WMD* supports this national framework by applying the three pillars across eight military mission areas, with the goal being to dissuade, deter, defend against, and defeat those who seek to harm the US, its allies, and partners through WMD use, and mitigate the effects if attacked. The mission areas are: offensive operations, elimination operations, interdiction operations, active defense, passive defense, WMD consequence management, security cooperation and partnership activities, and threat reduction cooperation. These mission areas are translated into joint military doctrine by JP 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction*, which uses an integrated approach with a focus on nonproliferation, counterproliferation, and consequence management activities. Air Force operational contributions to joint capabilities can be grouped into five supporting pillars labeled proliferation prevention, counterforce, active defense, passive defense, and consequence management (see Figure 1.1, page 3). Although different terms are used, one can see the common elements that yield a comprehensive approach for defeating WMD.

The Air Force pillar approach to CBRN can best be described as a number of mission areas or filters designed to reduce CBRN threats from “many” to “few.” The areas or filters are overlapping across the spectrum of operations. Underpinning these pillars are strategic enablers to enhance Air Force contributions to countering CBRN threats.

STRATEGIC ENABLERS

Enablers are crosscutting capabilities which integrate the five C-CBRN pillars and facilitate execution of Air Force operations. The three enablers are intelligence, international partnerships, and strategic communications.

Intelligence

Intelligence directly supports strategy, planning, and decision-making; enhances operational capabilities; and facilitates risk management assessments. Our current WMD intelligence can be strengthened by improving our early warning for WMD attacks; transforming processes to improve intelligence support; and fusing intelligence with operations to improve collection, assessment and dissemination of intelligence.

Actionable intelligence facilitates activities within each of the five Air Force pillars. For instance, intelligence enables the Air Force to prevent, defeat, or reverse the proliferation and/or use of WMD. Information collected by the intelligence community allows for the operational or tactical detection of a CBRN threat and selection of appropriate defeat options. Also, early detection based on intelligence enables an accurate characterization of the CBRN threat and informed prediction of impending attack. This early detection provides opportunities for counterforce, to include preemption, and active defense measures to neutralize the threat. Actionable intelligence also allows appropriate passive defense and consequence management measures to be put in place should these efforts fail.

International Partnerships

Building international partnerships bilaterally and multilaterally enhances Air Force capabilities to combat CBRN. Security cooperation efforts should not only focus on missile defense cooperation or the Proliferation Security Initiative (PSI) (see information box, page 16), but should equally stress counterforce, active defense, passive defense and consequence management cooperation. Assistance from the international community offers a force multiplier in the Air Force efforts to combat CBRN effectively and, if this fails, sustain operations. It is also critical that partner nations have the ability to detect and eliminate threats, and if that fails, to survive an attack and restore essential operations and services.

Strategic Communications

Strategic communications shape perceptions at the global, regional, and national levels. Words and actions of Airmen reassure allies and partners and underscore to potential adversaries, the costs and risk associated with CBRN acquisition and use. The Air Force plays a significant supporting role in the larger US Government effort to communicate policy and demonstrate US resolve.

AIR FORCE PILLARS OF C-CBRN OPERATIONS

A balanced and integrated approach is necessary to counter the CBRN threat. The activities associated with the Air Force pillars are mutually supporting and reinforcing. Each pillar may deter a potential adversary by denying them access to CBRN weapons and components or any perceived significant advantage through the threat or use of such weapons.

Proliferation Prevention

Proliferation prevention operations are designed to restrict the spread of CBRN weapons and prevent adversary acquisition of CBRN materials and technology by supporting political, economic, military, and diplomatic efforts to discourage the pursuit and acquisition of WMD and deny proliferation by enabling interdiction of dangerous materials before they reach enemy hands. Military activities include support for implementation of treaties, agreements, sanctions, and export control procedures. In addition, security cooperation and military-to-military activities foster common threat awareness, coalition building, and interoperability. An example would be USAF support to US participation in the PSI. Successful proliferation prevention operations greatly reduce the level of effort and resources that must be dedicated to the other Air Force C-CBRN pillars.

> *US European Command (USEUCOM) plays a major role in the Proliferation Security Initiative (PSI). Most PSI partners are in the AOR, which has been the location of numerous exercises, workshops, and expert meetings. Interdiction is also an important focus of the command's involvement in Project Caspian Guard, designed to enhance the capabilities of friendly states in the Caspian Basin in the areas of counterproliferation, counterterrorism, and counternarcotics. Additionally, USEUCOM has an active foreign consequence management program to assist allied governments through capability assessments and improved awareness. The command partners with the Defense Threat Reduction Agency in this effort, which has focused on Italy, Poland, and Spain this year. The command's support to the 2004 Olympics in Greece emphasized consequence management preparations. Finally, USEUCOM has been active in discussions with new North Atlantic Treaty Organization (NATO) countries on WMD and terrorism issues. A number of states possess CBRN defense or consequence management capabilities that will add to the NATO capability in these areas.*
>
> ***—Combating WMD: Challenges for the Next 10 Years,* February 2005, National Defense University**

Counterforce

Counterforce refers to offensive operations to strike adversary CBRN weapons and associated production, transportation, and storage facilities prior to use. Counterforce encompasses the detection, deterrence, denial, degradation, and/or destruction of an adversary's WMD assets, means of delivery, and facilities. Associated capabilities include the ability to find, fix, track, target, engage, and assess attacks against WMD targets, as well as the ability to defeat or neutralize the CBRN material, weapons, and equipment before they can be brought to bear on the battlefield, while limiting collateral effects. These operations are intended to deter or defeat a CBRN threat or subsequent use of WMD and reduce the level of threats to be dealt with by active or passive defenses. One unique aspect of this pillar is that it may be executed by a preemptive military strike as part of an overall operation or in response to an

enemy attack. As we have seen in previous conflicts, preemption requires close coordination with friends and allies, as well as the American people, in order to be accepted and effective. From a tactical perspective, pre-attack intelligence and precise target location are crucial.

Active Defense

Active defense operations attempt to intercept CBRN weapons en route to their targets. A layered defense approach provides opportunities to intercept CBRN threats at any point between employment and their targets. Interception may occur in space, air, or on the surface. Examples of active defense include missile defense, air defense, special operations, and security operations. Successful proliferation prevention, counterforce and active defense operations can reduce the threat, lessen the number of attacks, thwart an attack, and reduce the burden on passive defense and consequence management measures.

Passive Defense

WMD passive defense includes measures to minimize or negate the vulnerability to, and minimize effects of WMD use against, US and partner/allied forces, as well as US military interests, installations, and critical infrastructure. If an adversary succeeds in launching a CBRN attack and active defense measures fail to eliminate the delivery vehicle and/or weapons, passive defense will be essential. **Passive defense measures are designed to protect US and host nation installations and facilities, interests, points of embarkation and debarkation, critical infrastructure, equipment, and personnel from CBRN effects. Passive defense measures will enable sustained air and ground combat/combat support operations in a CBRN environment.** Activities associated with passive defense include preparation and planning for operations in a CBRN environment and are organized as *sense, shape, shield,* and *sustain* measures. Success depends on the effective integration of equipment, trainer personnel, and proven tactics, techniques, and procedures. In uncertain or hostile environments, passive defense measures include those consequence management measures designed to save lives and to restore and sustain wartime mission operations. Additionally, passive defense contributes to the success of the other CBRN pillars.

Consequence Management

Consequence management (CM) activities serve to reduce the effects of a CBRN attack or event, and assist in the restoration of essential operations and services at home and abroad in a permissive environment. CM includes actions taken to respond to and mitigate the effects of a WMD attack or event against our homeland, deployed forces and US interests abroad, and to assist the US, host nation, and allies on an installation and provide military assistance to civilian authorities off an installation to restore essential operations and services. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines CM as “actions taken to maintain or restore essential services and manage and mitigate problems resulting from

disasters and catastrophes, including natural, manmade, or terrorist incidents." The primary activities that comprise CM, which are generally regarded as post-hostility activities, are casualty management, remediation of the affected area, and restoration of essential services. Figure 1.2 depicts the overlapping relationship between passive defense and CM.

The activities and planning in the passive defense and consequence management pillars are conducted simultaneously across the spectrum of pre-, trans-, and post-attack. In the pre-attack phase, activities are focused primarily in the passive defense pillar. Commanders must consider the logistics of pre-positioning equipment, materials, and supplies necessary to respond to the direct effects and consequences of a CBRN event. While in the post-attack phase, activities are focused primarily in the consequence management pillar, initially on saving lives and, where feasible, on mission restoration and sustainment. Various activities in the sense, shape, shield, and sustain areas of passive defense should be conducted to reduce further vulnerability and minimize effects of WMD and subsequent attacks on mission capabilities. Following the cessation of hostilities and when host military and civil law enforcement agencies have control, consequence management activities are focused on the restoration of essential operations and services.

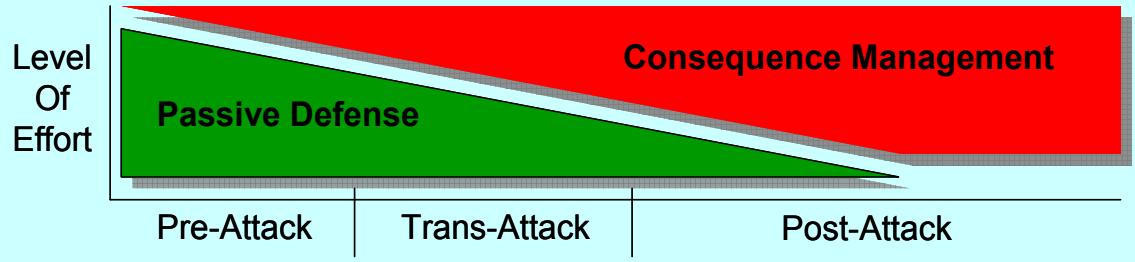


Figure 1.2. Passive Defense and Consequence Management Continuum

COMMAND RELATIONSHIPS

Command relationships for C-CBRN operations will vary depending upon the nature of the threat and the set of capabilities needed to counter the threat, but should be integrated into normal command relationships. C-CBRN operations may be single-Service, joint, or multinational in scope; may involve civil authorities from the US and host nations; and can take place as part of an ongoing military operation or under the command of a distinct joint task force.

Due to the indiscriminate nature of WMD, their effects may not be confined to a specific target or military installation. Commanders should be cognizant of the shared responsibilities across military jurisdictions, civil authorities, and host nations. The Air

Force may be asked to provide support in the form of air mobility, command and control, medical care, force protection, and consequence management.

Joint Command and Control (C2) Process

Normally command and control is through a joint force commander (JFC) or, for a combined operation (i.e., with coalition forces), a combined force commander. The JFC C2 support system gives the JFC the means to command forces conducting C-CBRN operations. The C2 process includes the direction to survive and operate in a CBRN environment, and establish the necessary requirements for starting consequence management activities.

Air Force Forces

The JFC normally appoints the commander, Air Force forces (COMAFFOR) as the joint force air component commander (JFACC) to direct air and space operations. Air Force commanders should develop a thorough understanding of joint and allied capabilities. Commanders should establish working relationships that foster information sharing and resolve equipment interoperability issues.

Coalition Operations

It is vital that C-CBRN activities be coordinated in advance with host nations, coalition partners, and international organizations. Combatant command Air Force components may coordinate with the staff of the geographic combatant commander and the Department of State, and develop support agreements with the host nation to facilitate logistics across jurisdictions.

Interagency Operations on US Territory

The COMAFFOR will coordinate Air Force forces efforts with federal, state, and local agencies on US territory. Coordination with state agencies may include interactions with Army and Air National Guard units in Title 32 status operating in their state.

CHAPTER TWO

PROLIFERATION PREVENTION OPERATIONS

> *The United States, our friends and allies, and the broader international community must undertake every effort to prevent states and terrorists from acquiring WMD and missiles. We must enhance traditional measures – diplomacy, arms control, multilateral agreements, threat reduction assistance, and export controls – that seek to dissuade or impede proliferant states and terrorist networks, as well as to slow and make more costly their access to sensitive technologies, material, and expertise.*
>
> ***—National Strategy to Combat Weapons of Mass Destruction, December 2002***

GENERAL FRAMEWORK

The Air Force approach to proliferation prevention includes those actions (e.g., diplomacy, arms control, multilateral agreements, threat reduction assistance, export controls, and interdiction) taken to prevent or limit the spread of WMD. By dissuading or impeding access to, or distribution of, sensitive technologies, materials, or expertise, the Air Force can reduce the potential for adversary acquisition and use of WMD.

Air Force proliferation prevention capabilities include detecting, deterring, and denying an adversary's acquisition of CBRN weapons and components; air, space, and cyberspace power provide robust capabilities to do this. These capabilities help ensure prohibited technologies and materials do not get into the hands of potential adversaries or states potentially hostile to the US. Air Force proliferation prevention activities include intelligence, operational, and technical support for the implementation of treaties, agreements, sanctions, and export control procedures, as well as national, international, and host-nation programs. For example, the Air Force is involved in implementation and compliance with the Strategic Arms Reduction Treaty; facilitating national technical means of monitoring international compliance with the Treaty on the Non-Proliferation of Nuclear Weapons; and tracking and interdicting the transport of illicit technologies and expertise as an operation of the PSI. In addition, these activities are in direct support of the NMS-CWMD mission areas of Security Cooperation and Partner Activities, Threat Reduction Cooperation, and Interdiction.

Along with security cooperation and interdiction operations, the Air Force must be prepared to provide support for Threat Reduction Cooperation missions. These missions involve activities undertaken with the consent and cooperation of host nation authorities to enhance physical security; emplace detection equipment; and reduce, dismantle, redirect, and/or improve protection of a state's existing CBRN programs,

stockpiles, and capabilities. A successful proliferation prevention effort can reduce the need for counterforce and active defense operations.

Detect and Monitor

Detect and monitor operations include activities that locate, characterize, and track adversary efforts to acquire WMD. Identification, surveillance, and tracking of adversary activity enable commanders to maintain comprehensive intelligence on adversaries' capabilities and possibly gain information on their intentions. Examples of Air Force intelligence, surveillance, and reconnaissance (ISR) capabilities to detect adversary activity include individuals (every airman a sensor), satellites, and various manned and unmanned aircraft and/or systems.

Nuclear Power and the Nuclear Weapons Threat

Virtually any combination of plutonium [Pu] isotopes (different forms of an element) can be used to make a nuclear weapon, but not all combinations are equally convenient or efficient. The most common isotope, Pu-239, is best suited for making nuclear weapons, and is produced in various quantities in virtually all operating nuclear reactors. A critical factor in the production of relatively pure (93%) "weapons-grade" Pu-239 is the length of time the reactor fuel remains in the reactor and exposed to neutron irradiation. As the irradiation time increases, the reactor becomes less effective in producing pure Pu-239, but more efficient in producing electrical power. Longer irradiation time leads to the buildup of higher Pu isotopes, such as Pu-240 and 241, resulting in isotope combinations with less concentration of Pu-239. While these "fuel-grade" or "reactor-grade" combinations can be used to produce weapons, the process is much more difficult (and challenging for less technologically-advanced countries) due to spontaneous fission, heat production, or gamma ray emission.

Another factor in producing weapons-grade Pu-239 is the type of reactor in use. Many types exist today, such as light water, heavy-water, graphite-moderated, and fast-breeder reactors. While all produce Pu-239, light-water reactors are inefficient at producing weapons-grade Pu-239, but extremely efficient in electrical-power production. Conversely, graphite-moderated reactors have been found most suitable for Pu-239 production, as fuel elements can be changed with the reactor on-line, reducing the fuel irradiation time, but this also reduces power production efficiency.

Nation-states intent on developing nuclear weapons obviously prefer reactors efficient in producing weapons-grade Pu-239. Such is the case with North Korea. Long desiring a nuclear capability to offset the perceived US military threat, North Korea began a nuclear program, with Soviet assistance, in the mid-1960s. The program resulted in a 5 megawatt (MW) reactor at Yongbyon and the start of construction of 50 MW and 200 MW graphite-moderated reactors. In the 1994 US/North Korea "Agreed Framework," North Korea agreed to dismantle these facilities and freeze its nuclear program in exchange for two light-water reactors and normalization of relations. Since that time, North Korea has repeatedly violated this agreement, which ultimately collapsed in 2003. At that time, North Korea admitted possession of nuclear weapons.

— Various sources

Monitoring CBRN programs is often complicated by the dual-use nature of chemical, biological, radiological, and nuclear materials. Pharmaceutical and petrochemical factories can mask chemical and biological warfare production programs. Radiological materials are commonly used in support of the medical community, and *all* nuclear reactors, whether designed specifically for peaceful electric-power production or for production of weapons-grade material, produce plutonium of various grades that can be used to make nuclear weapons. Distinguishing between peaceful civilian industrial use and hostile use requires robust intelligence and surveillance capabilities.

Denial and Interdiction Operations

Denial and interdiction operations aid compliance with international agreements and prevent prohibited acquisition of CBRN assets. These operations track, intercept, search, divert, seize, or stop trafficking of WMD, delivery systems, related materials, technologies, and expertise from adversaries. An example of these operations includes the redirection of international shipments of unauthorized CBRN, related material, or information sources. Operations to deny and interdict proliferation-related shipments assist the disruption and dismantlement of proliferation networks. Associated activities may include interception, identification, securing, disposing of, or rendering safe materials suspected to be WMD-related.

Information Operations (IO)

A direct result of the Information Age is the ability to place a greater emphasis on influencing political and military leaders, certain individuals or organizations, and national populations to resolve conflicts without resorting to conventional military force. IO can assist CBRN deterrence and counterproliferation policy and objectives through the application of the tenets of influence operations. The objectives of influence operations are to affect adversary behaviors, protect friendly operations, communicate national intent, and project accurate information. These objectives are achieved via physical actions and activities (exercises, training missions, etc.), counterpropaganda, counterintelligence, and public affairs operations. These types of operations demonstrate and communicate resolve, heighten public awareness, promote national and coalition policies, aims, and objectives, as well as countering adversary propaganda and disinformation in the news. Influence operations are most useful in CBRN deterrence when applied before the onset of hostilities and ultimately may deter potential adversaries by helping “drive a crisis back to peace” before the use of force becomes necessary. If deterrence fails, the subsequent actions taken to resolve the situation must be synchronized and coordinated with a new information operations campaign in order to capitalize on successes (armed recovery of CBRN material, armed defense, physical destruction of threat, etc.). Military planners must pay special attention to the integration of intelligence and IO in proliferation prevention, since deterrence options may involve a coordinated approach to the collection, declassification, and release of information on adversary CBRN capabilities.

Security and Intelligence Cooperation

Security assistance operations implement programs and initiatives that respond to regional threats and provide conventional military assistance to secure regional stability and national sovereignty. Assistance to allies and friends improves interoperability and strengthens C-CBRN capabilities.

Proliferation Security Initiative

In May 2003, President George W. Bush initiated a voluntary partnership of countries working together to develop broad measures to prevent the proliferation of WMD. The partnership became known as the Proliferation Security Initiative, or PSI. Today, the PSI is composed of core member states–Australia, Canada, France, Germany, Italy, Japan, the Netherlands, Norway, Poland, Portugal, Russia, Singapore, Spain, the United Kingdom, and the United States-and carries the signatures of more than 60 states. The PSI creates a global partnership in the prevention of WMD, and is an international mechanism to interdict shipping vessels, cargo trucks, and aircraft suspected of transporting WMD.

On 4 October 2003, German and Italian security forces operating under the auspices of the PSI intercepted a marine vessel in the Mediterranean Sea on its way from Malaysia to Libya. The ship was carrying components for a "turn-key" uranium enrichment centrifuge factory that appeared to have been produced using the expertise of Pakistani nuclear specialists. The ship contained the production equipment of nuclear weapons technology that carried the distinct trademark of the Pakistani scientist A.Q. Khan, who was later revealed to have been selling nuclear secrets to rogue states around the world. Following the successful interdiction operation in October 2003, Libya's leader, Colonel Moammar Ghadafi, in December 2003, agreed to permanently dismantle Libya's WMD programs and allow weapons inspectors into the country to start the dismantling process. "Colonel Ghadafi made the right decision, and the world will be safer once his commitment is fulfilled. We expect other regimes to follow his example. Abandoning the pursuit of illegal weapons can lead to better relations with the United States and other free nations" - President Bush, National Defense University, 2004.

—Various Sources

Military-to-military engagement consists of coordinated activities that reinforce US positions in the international community, improve interoperability, facilitate information sharing, provide training opportunities between US and international forces, and prepare for future coalition operations. Cooperative military-to-military engagements enhance bilateral/multilateral efforts and improve diplomatic relations.

Military-to-military intelligence cooperation plays a vital role in preventing the proliferation of CBRN weapons. The PSI allows the interdiction of transporters of WMD through enhanced intelligence sharing and cooperation between US and international partners.

Air Force capabilities may be called upon by order of the Secretary of Defense to render security and intelligence assistance or to support US agencies, like the

Department of Justice, to prevent proliferation of CBRN threats that may be directed at the homeland. For more information on homeland security operations, refer to AFDD 2-10, *Homeland Operations*.

Treaties and Agreements

The US is a party to numerous international treaties and agreements that prohibit or restrict proliferation of CBRN weapons and related technology. Treaties such as the Non-Proliferation Treaty, Biological Weapons Convention, and Chemical Weapons Convention provide international standards to address the activities of potential proliferators. International agreements such as the PSI provide a forum for states to engage in multilateral exercises and information sharing. Agreements like the PSI facilitate enforcement of arms control treaties and provide for diplomatic and military tools to respond to treaty violations.

PLANNING CONSIDERATIONS

Status of forces agreements, diplomatic notes, and/or other international agreements determine the legal status of US armed forces in host countries and should be in place before conducting operations. These agreements preserve command authority, guarantee fair treatment of individual Service members, and conserve scarce resources. At times, US forces must conduct operations in countries where these agreements are not in place. In those instances, US forces should consult with the servicing staff judge advocate to determine the existence of applicable international agreements, the possibility of obtaining an agreement if one does not exist, or the exact status of the deploying forces in the absence of an agreement.

While operating in foreign territory or with foreign nationals, commanders must plan to safeguard sensitive equipment and dual-use technology that may be diverted to adversaries seeking CBRN capabilities.

Due to the clandestine nature of typical proliferation networks, the intelligence necessary to support effective interdiction efforts may provide very little time for planning and conducting proliferation prevention operations. Commanders should maintain the ability to plan and act quickly in support of proliferation prevention taskings.

CHAPTER THREE

COUNTERFORCE OPERATIONS

The security environment confronting the United States today is radically different from what we have faced before. Yet the first duty of the United States Government remains what it always has been: to protect the American people and American interests. It is an enduring American principle that this duty obligates the government to anticipate and counter threats, using all elements of national power, before the threats can do grave damage…. There are few greater threats than a terrorist attack with WMD. To forestall or prevent such hostile acts by our adversaries, the United States will, if necessary, act preemptively in exercising our inherent right of self-defense.

— National Security Strategy, March 2006

GENERAL FRAMEWORK

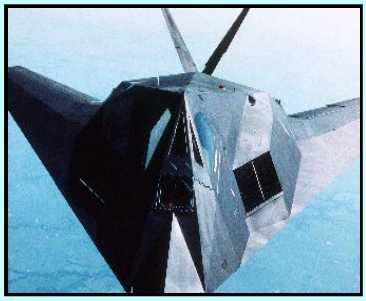
Counterforce operations provide combatant commanders with the ability to defeat the full suite of CBRN capabilities before they can be used against United States interests, while minimizing collateral effects. While Air Force counterforce operations are conducted under the auspices of strategic attack, counterair, counterland, countersea, and information operations, the inherently catastrophic potential of WMD warrants an independent examination of the objectives, potential targets, resources and forces, and planning considerations.

Counterforce operations aim to detect, deter, deny, degrade, or destroy adversary CBRN capabilities, including research and development, production, and storage facilities, fielded forces, and related C2. Numerous kinetic and non-kinetic capabilities are available to create counterforce effects against adversary CBRN capabilities. Given the threat posed by WMD, counterforce operations present unique planning considerations in the areas of operational risk, ISR needs, targeting and weaponeering challenges, and legal issues.

COUNTERFORCE OBJECTIVES

The United States Air Force may conduct counterforce operations to achieve a variety of strategic, operational, or tactical objectives. These objectives fall under the general headings of: detect, deter, deny, degrade, or destroy adversary CBRN capabilities. Accomplishment of these objectives leads to a “rollback” of the adversary’s CBRN capabilities or their ability to employ them against the forces or territories of the United States or those of its allies and friends.

Degradation of Iraqi WMD Capability – Operation Desert Storm



Baghdad's offensive weapons and research and productions sites—the known nuclear, biological, and chemical (NBC) weapons research, production, and storage centers—underwent repeated attacks to ensure that their products did not endanger the coalition; manned aircraft and TLAMs hammered thirty-one different NBC sites that first night and day. The F-117As proved particularly devastating, for unlike the TLAM, they could destroy hardened targets. Laboratory, research, and production facilities staggered under stealth-dropped smart bombs; video subsequently showed blasts sending destructive ripples through buildings like some parody of waves crashing on a beach.

***—Storm over Iraq: Air Power and the Gulf War* Richard P. Hallion**

Detect

While not truly an objective of counterforce operations in and of itself, the ability to detect the location of adversary WMD and related facilities is the fundamental enabler for effective counterforce operations.

Predator UAS

E-8C JSTARS Aircraft

Deter

A credible counterforce capability may have a deterrent effect on adversaries contemplating the deployment or use of WMD. If adversaries doubt their abilities to secure and protect their WMD assets, they may be less likely to rely on them or even develop them in the first place.

AL QAEDA ATTACKS - 1998

On August 7, 1998, two trucks loaded with high-yield explosives were detonated at US Embassies in Nairobi, Kenya, and Dar es Salaam, Tanzania, killing 224 people, including 12 Americans, and wounding more than 4,000.

The US government quickly concluded the embassy attacks were an al Qaeda operation, and 12 days later the US launched Operation INFINITE REACH, a strike against al Qaeda operations. The targets included a suspected al Qaeda terrorist training facility in Afghanistan and a suspected chemical weapons factory in Khartoum, Sudan.

Operation INFINITE REACH demonstrates the complexity of detecting, deterring, denying, degrading, and destroying individual adversaries and their WMD assets and the importance of direct intelligence for engagement.

—Various Sources

Deny

Target hardness and/or collateral damage considerations may make direct attack against WMD or related facilities impossible or undesirable, but an effects-based approach to targeting may result in alternatives that prevent the adversary from gaining access to or employing WMD.

Degrade

In situations where an adversary's CBRN capabilities are robust and widely dispersed, assuring destruction of the enemy's WMD and infrastructure may fall beyond current counterforce capabilities. It is still possible, however, to achieve results that significantly limit the adversary's ability to respond, and thus limit the potential damage to friendly forces or territory. Additionally, in a situation where an adversary's CBRN capabilities are still maturing, counterforce operations may significantly lengthen the period of time necessary to field operational CBRN capabilities.

Destroy

The fundamental objective of counterforce operations is to destroy or render impotent adversary CBRN capabilities before they are employed against friendly forces or territory. If military action is necessary, destruction of CBRN capabilities on the adversary's home territory represents the best opportunity to limit friendly casualties and avoid contamination and damage to friendly territory.

COUNTERFORCE TARGETS

Counterforce targets are those that enable the adversary to develop, produce, store, or employ WMD. Identifying and striking these targets in the early stages of development and acquisition reduces an adversary's potential attack capability, provides commanders with more options to defeat the threat, and potentially reduces collateral effects. Guidance and objectives received from national leadership and the JFC, combined with intelligence assessments of adversary CBRN threats, capabilities, and locations, help operational planners select CBRN targets, determine target priority, and sequencing. Counterforce targets may be planned before the initiation of hostilities and updated as warranted by new intelligence. The difficulty of conducting successful counterforce operations against CBRN capabilities increases the further the adversary has progressed down the path from development to WMD employment.

Research and Development Facilities

Operations against research and development (R&D) facilities rely heavily on accurate intelligence to detect and characterize CBRN activities, which may be concealed within medical and industrial complexes otherwise used for legitimate purposes. A preemptive strike could have a temporary effect or completely disable future CBRN development.

Weapon Production Facilities

Operations against production facilities provide another option for degrading or destroying an adversary's CBRN capability. While the effect of the operation may be temporary, strikes against production facilities represent a relatively low-risk option for reducing the CBRN threat, especially if the adversary has not yet achieved an operational CBRN capability.

Weapon Storage Facilities

As with R&D and weapon production facilities, operations against CBRN storage facilities present effective options for the denial, degradation, and destruction of an adversary's ability to employ CBRN. If detected, fixed storage facilities are particularly vulnerable to counterforce operations. However, adversary passive defense measures, such as hardening or deeply burying the facility, may complicate destruction of the weapons inside. Adversary use of mobile storage facilities can further complicate destruction of CBRN weapons. Effects-based solutions, rather than weapon destruction, may still deny the adversary access to the facility.

Fielded Weapon Systems and Supporting Infrastructure

Attacks (kinetic or non-kinetic) against this target category seek to deter, deny, degrade, or destroy an adversary's ability to promptly employ WMD, either prior to an adversary attack or to limit damage from potential follow-on attacks. This target category is one of the highest priorities and potentially the greatest threat to the national security of the United States and its allies and friends. Once deployed into the field,

weapon systems such as mobile surface-to-surface missile system transporter erector launchers present a significant challenge to current ISR capabilities and have demonstrated a capability for rapid reaction and launch with little or no warning.

CBRN-Related C2 Facilities

Command and control capabilities are a critical node in an adversary's CBRN capability. Counterforce operations, both kinetic and non-kinetic, against C2 facilities necessary for directing the employment of WMD may impede the adversary's ability to employ these weapons for a period of time. If conducted concurrently with operations against the adversary's fielded forces and storage locations, attacks against C2 capabilities may further reduce the adversary's ability to employ WMD.

LINKAGE TO AIR FORCE OPERATIONS

Within the construct of Air Force doctrine, counterforce operations are not addressed as a separate entity. A variety of Air Force operations, including strategic attack, counterair, counterland, countersea, and information operations, may be conducted to achieve counterforce effects. The linkage between these categories of operations and counterforce are:

Strategic Attack Operations

Strategic attack operations are offensive actions specifically selected to achieve national or military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict, and may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition (please see AFDD 2-1.2, *Strategic Attack*). Strategic attack operations can bypass fielded forces and act directly upon the adversary's strategic centers of gravity (COGs) to affect its sources of strength, freedom of action, or will to fight. Based on this construct, operations against the full spectrum of CBRN targets could be considered strategic attack operations. In both Operation DESERT STORM and Operation IRAQI FREEDOM, suspected Iraqi CBRN delivery vehicles, storage areas, production facilities, and associated C2 capabilities were designated as COGs and became the focus of extensive counterforce operations throughout both campaigns.

Counterair Operations

Offensive counterair (OCA) operations, including the surface attack mission, consist of offensive operations aimed at destroying, disrupting, or degrading enemy air and missile threats and their supporting infrastructure (see AFDD 2-1.1, *Counterair Operations*). Consistent with the objectives of counterforce operations, the main goal of the OCA surface attack mission is to prevent the employment of adversary air and missile capabilities. The allocation of strike aircraft to "SCUD hunting" during Operation DESERT STORM is a prime example of OCA operations intended to achieve a counterforce effect.

Counterland Operations

Counterland operations are air and space operations against enemy land force capabilities to create effects that achieve JFC objectives by dominating the surface environment using air and space power (please see AFDD 2-1.3, *Counterland Operations*). The most relevant portion of counterland to counterforce operations against CBRN targets is air interdiction that aims to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces. For example, air strikes against a convoy transporting WMD to indirect fire units near the front or strikes against CBRN equipped indirect fire units would constitute counterforce operations.

Countersea Operations

Countersea operations conducted to attain and maintain a desired degree of maritime superiority by the destruction, disruption, delay, diversion, or other neutralization of threats in the maritime environment (please see AFDD 2-1.4, *Countersea Operations*). While normally under the purview of the Maritime Component, the JFACC may act in support of maritime operations with air, space, or information capabilities to perform countersea operations. Countersea operations against CBRN-armed surface ships or submarines, including those still in port, contribute to achieving counterforce objectives. Prior to targeting CBRN-armed vessels in port, commanders and planners must carefully consider the potential collateral effects of such an attack.

Information Operations

IO are the integrated employment of the capabilities of influence operations, electronic warfare operations, and network warfare operations, in concert with specified integrated control enablers, to influence, disrupt, corrupt, or usurp adversarial human and automated decision-making while protecting our own (AFDD 2-5, *Information Operations*). The joint force can leverage each of these three capabilities to achieve counterforce effects. While each IO capability is separate and distinct, when linked, they can achieve operationally important IO effects in the CBRN arena.

Influence operations employ the capabilities of psychological operations, military deception, operations security, counterintelligence operations, counterpropaganda operations, and public affairs operations to affect the perceptions and behaviors of adversary leaders, groups, or entire populations against the development or use of CBRN weapons. Influence operations can potentially deter an adversary from employing WMD.

Electronic warfare operations use electromagnetic and directed energy to deny, disrupt, degrade, and/or destroy adversary CBRN capabilities. These operations can utilize infrared, electro-optical, laser, radio frequency, targeting devices, and directed energy threat systems.

Network warfare operations use the tools of cyberspace and the global information grid to change, add, delete or deny operational data to an adversary's

information systems to dissuade him from employing CBRN weapons, or for the purpose of denying, disrupting, degrading, and/or destroying his CBRN capabilities. Electronic or network warfare may interfere with adversary C2 capabilities and deny it the ability to employ WMD. Network warfare may also be employed to disrupt WMD development or production efforts.

COUNTERFORCE RESOURCES AND FORCES

The effectiveness of counterforce operations against adversary CBRN capabilities depends on the capabilities and availability of certain resources and systems. The choice of which resources or systems to employ is driven by the threats, environmental conditions, and available intelligence. The inherent characteristics of air and space forces make them particularly well suited to conducting counterforce operations against adversary CBRN capabilities. Additional joint capabilities that may be leveraged to successfully achieve counterforce objectives are:

Aircraft

Many modern strike aircraft (such as the B-2A Spirit), possess, in varying degrees, the ability to penetrate defenses, all-weather precision, payload, extended range, and loiter capability necessary to accomplish effective counterforce operations.

Missiles

A variety of missiles, including both ballistic and cruise missiles, possess significant standoff range, precision, and quick-reaction capabilities coupled with the ability to strike CBRN targets without placing military personnel in harms way.

Unmanned Aircraft Systems (UAS)

The capabilities of UASs for reconnaissance and strike continue to evolve. UASs retain the attributes of traditional aircraft, but share with missiles the advantage of not exposing friendly military personnel to direct hostile fire.

Special Operations Forces (SOF)

SOF may conduct direct attacks against CBRN capabilities or provide terminal guidance for attacks by other capabilities. Throughout Operation IRAQI FREEDOM, SOF were deployed in western Iraq to prevent the use of SCUD missiles against Israel or other nations in the region.

Information Operations

IO may be employed to achieve counterforce objectives or support operations by other capabilities through non-kinetic effects to interfere with adversary CBRN production or C2. Influence operations could convince an adversary not to use WMD or agree to give up its CBRN capabilities without the need for traditional military action.

Communications System Support and ISR

These systems are critical to the success of counterforce operations because they provide the information necessary to detect and target adversary CBRN capabilities and assess the outcome of kinetic or non-kinetic operations.

Surface Forces

When employed as part of a larger military campaign, surface forces enable the securing and/or destruction of captured adversary WMD or capabilities. Occupation of adversary facilities prevents the theft or diversion of WMD or technology.

Agent Defeat Weapons

These are a special class of weapons designed to defeat CBRN capabilities and limit collateral damage and hazardous material dispersal to the greatest extent possible by incinerating or entombing potential contamination.

PLANNING CONSIDERATIONS

The USAF may conduct strategic attack, counterair, counterland, countersea, or information operations against adversary CBRN capabilities, either within or separate from extensive military operations, to achieve counterforce effects. While not distinct from a doctrinal perspective, the inherent potential for mass destruction and/or mass effect of WMD, and the timing and circumstances of the counterforce operation present the military planner with unique requirements. Operational risk, ISR timeliness and accuracy, targeting, and international law are all areas for special consideration when planning C-CBRN operations.

Operational Risk

Counterforce operations face varying degrees of operational risk that fall into two major categories. The first is the direct risk faced by military members participating in the operation. The use of stealth aircraft, standoff weapons, UASs, or non-kinetic capabilities such as network warfare may greatly reduce this facet of operational risk.

The second category of operational risk involves the risks associated with the threat of the target itself. Fielded CBRN forces present a much more urgent and direct threat, given their readiness to strike at friendly forces or territory, than do their associated production facilities, which represent a longer-term threat. One must also consider the operational risks that result from a partially successful or unsuccessful counterforce operation. For example, if the target were a number of launch-ready CBRN armed missiles, a partially successful attack may precipitate, with remaining missiles, the very attack the counterforce operation aimed to counter. Conversely, a partially successful operation against production facilities may still degrade the adversary's CBRN capabilities for some time and present much less risk of immediate retaliation.

ISR Requirements

Accurate and timely ISR information is a critical enabler for successful counterforce operations against CBRN capabilities. Adversary CBRN capabilities must be detected before they can be countered. The proliferation of mobile missiles and underground facilities greatly complicates the challenge faced by those who collect and analyze ISR information. Potential adversaries have learned the lessons of the United States-led precision air campaigns in the Balkans and Southwest Asia, and now employ more sophisticated efforts to camouflage, conceal, disperse, and harden CBRN facilities against attack.

Targeting and Weaponeering Considerations

The proliferation of hardened or deeply buried facilities dedicated to the production, storage, or C2 of adversary WMD and infrastructure challenges current capabilities to deal with this threat. Facilities may be hardened or buried deeply enough to protect their contents from direct attack by all existing munitions, including nuclear weapons. While destruction of the facility contents may be impractical (or impossible), an effects-based approach to targeting may still deny the adversary access to CBRN capabilities for a period of time.

Even adversary CBRN targets that are vulnerable to existing U.S. counterforce capabilities present weaponeering challenges. For example, the use of a nuclear weapon to strike an adversary's hardened and deeply buried CBRN storage facility may effectively eliminate the threat, but create significant collateral damage, ionizing radiation, and nuclear fallout. Conventional weapons may pose a similar risk when employed against adversary chemical and biological weapons. The conventional explosion may disperse rather than destroy the agents resulting in residual hazard for local civilian populations or advancing friendly forces. Specialized agent defeat weapons that neutralize the CBRN weapon (i.e., via simple puncture or extremely high temperature) without dispersing the agent, as with a high explosive, may help to mitigate these risks.

Legal Considerations

The preemptive nature of counterforce operations, particularly when not connected to a broader military campaign, is subject to conflicting interpretations of international law. Given this controversial nature, orders to conduct counterforce operations will likely originate at the highest levels of the United States Government. Resulting rules of engagement may be highly restrictive given the inherently high operational risk and potential for collateral damage.

CHAPTER FOUR

ACTIVE DEFENSE OPERATIONS

> *It is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate) with funding subject to the annual authorization of appropriations and the annual appropriation of funds for National Missile Defense.*
>
> **— National Missile Defense Act of 1999 (Public Law 106-38)**

GENERAL FRAMEWORK

While counterforce operational capabilities are proactive in nature, active defense operational capabilities contain reactive characteristics. Active defense operations attempt to intercept CBRN weapons enroute to their targets. Successful active defense operations can complement counterforce activities by forcing an adversary to alter attack strategies and expose CBRN assets. If counterforce operational capabilities are unsuccessful or unavailable, successful active defense operations can reduce the threat, lessen the number of attacks, thwart an attack, allow more effective passive defense and consequence management responses, and enhance US/Coalition operational capability following a CBRN attack.

Effective active defense measures take into account active defense capability sets (detect, divert, and destroy) with various planning considerations for each of the layered-defense domains (i.e., space, air, and surface). This layered defense approach incorporates networked space, air, and surface systems, and employs both kinetic and non-kinetic means of defeat. Measures include, but are not limited to, missile defense (ballistic and cruise), offensive/defensive counterair (OCA/DCA), special operations, and force protection operations to defend against conventionally and unconventionally delivered WMD.

Active Defense Objectives

Active defense capability sets include actions to detect, divert, or destroy an adversary's WMD while enroute to US interests while minimizing collateral damage.

Detect includes space, air, and surface sensors to locate, characterize, track, and monitor an enroute CBRN threat. **Divert** capabilities cause the CBRN threat to redirect, modify, or miss the intended target set. **Destroy** capabilities prevent the function of or neutralize/eliminate the CBRN threat.

Theater Missile Warning - Operation DESERT STORM

Theater missile warning evolved as a tactical concept during Operations DESERT SHIELD and DESERT STORM. For the first time in history, U.S. personnel participated in a major land campaign where they faced missile threats, potentially armed with chemical or biological warheads, from highly mobile and hard-to-find weapons systems. This meant existing U.S. Strategic Missile Warning units were forced to perform a mission for which they were not originally designed -- the detection and warning of shorter-burning, short-range missiles launched less than 1,000 kilometers from deployed forces. During the operation, Defense Support Program satellites detected 87 SCUD missile launches. A warning sent to the theater generally allowed time for US and allied forces to seek shelter from incoming SCUDs. The data was also used for attack operations (SCUD hunting) and Patriot missile operations (SCUD in-flight destruction). Based on the lessons learned from DESERT STORM, new space units were created to improve warning operations to the theater, using space-based missile warning and infrared detection.

—Various sources

PLANNING CONSIDERATIONS

Active defense forces must work together to counter enemy attacks in order to protect friendly forces. These defenses should detect, track, and provide time-sensitive data to neutralize attacking enemy CBRN systems. While counterforce is proactive in nature, active defense is reactive, dependent upon an adversary's engagement. As a result, timely and accurate data is vital to the success of the active defense detect, divert, and destroy countermeasures. The layered defense approach of active defense allows a greater opportunity to successfully intercept incoming WMD. In addition to the layered defense approach, successful implementation of CBRN active defense requires careful attention to the planning considerations of time sensitivity, engagement location of target set, and rules of engagement.

Layered Active Defense Approach

Active defense capabilities are deployed in a layered defense (i.e., space, air, and ground (surface)) that maximize intercept opportunities against a wide range of threats. Active defense interception occurs within space, air, and/or ground (surface) domains, where US capability resides. These capabilities are further subdivided into "sensor" (detect) and "shooter" (divert or destroy) categories (See figure 4.1, page 29).

Layered Active Defense	Doctrinal Capability Sets		
	Detect	Divert	Destroy
▪ **SPACE**			
▪ **Sensors (space-based)**			
▪Ballistic threats	X		
▪Air threats	X		
▪Ground threats	X		
▪ **AIR**			
▪ **Sensors (airborne)**			
▪Air threats	X		
▪Ground threats	X		
▪ **Shooters (airborne)**			
▪Air threats		X	X
▪Ground threats		X	X
▪ **GROUND**			
▪ **Sensors (ground)**			
▪Air threats	X		
▪Ground threats	X		
▪ **Shooters (conventional/SOF)**			
▪Air threats	X	X	X
▪Ground threats	X	X	X

Figure 4.1. CBRN Active Defense Framework

The space domain of the active defense layered approach encompasses all space-based capabilities. These assets provide critical detection ability, including theater and ballistic missile launches. Other space-based assets assist the warfighter by supporting active defense capabilities (e.g., communication, weather, and precision navigation/timing). Space assets also provide data to national decision makers.

The air domain of the active defense layered approach includes all airborne capabilities across all three doctrinal capability sets. These assets include a range of capabilities from airborne radar providing detection to OCA/DCA platforms supporting diversion and destruction of CBRN delivery systems. DCA operations consist of active and passive air defense operations. Potential CBRN threats may consist of CBRN payloads on a multitude of delivery vehicles ranging from general aviation aircraft and unmanned aerial vehicles to commercial and military airframes to cruise and short-range ballistic missiles.

The ground (surface) portion of the active defense layered approach provides capabilities to both sense and neutralize a CBRN threat on any ground or water battlespace. This surface area includes any geographic region regardless of the installation boundary (i.e., “inside or outside the wire”), as well as littoral access to any Air Force operating location or US areas of interest. The required capabilities include ground-based radars, security forces, and special operations forces.

An integrated approach to active defense is essential to effective C-CBRN operations, and active defense must continue to be a highly coordinated joint mission for conducting missile defense and force protection. Active defense operations leverage Air Force capabilities for OCA, DCA, air interdiction, and force protection.

Time Sensitivity

Time sensitivity is a critical component in CBRN active defense between target detection and engagement. Timely and accurate data collection, analysis, and presentation to senior decision makers are vital to effective active defense operations. Therefore, throughput must be robust enough to support short reaction times. In addition, commanders must be prepared for decision-making within a compressed timeline, as well as coping with adversaries who attempt to use deceptive measures to disrupt active defense systems. As discussed below, rules of engagement (ROE) may assist in shortening these decision timelines.

Engagement Location of Target Set

Active defenses should engage enroute targets as far from the US and allied forces as operationally possible, taking into account ROE and evidence preservation considerations. Commanders should establish procedures to identify appropriate active defense measures to defeat CBRN attacks in advance of attack.

Rules of Engagement

Although active defense against an adversary's CBRN capability is similar to conventional capability, commanders must take into account the effects of agent/material dispersal near friendly forces or populated areas. In addition, active defense measures against both conventional and CBRN threats require a highly complex, joint methodology to provide warning and reporting to in-theater users within a time-sensitive environment. Specific ROE take into consideration established command relationships.

US Army Patriot Missile Air Defense System

The Patriot missile system is a long-range, all-altitude, all-weather air defense system to counter tactical ballistic missiles, cruise missiles and advanced aircraft. The mach 3+ Patriots were deployed by US forces during Operation Iraqi Freedom, stationed in Kuwait, and successfully destroyed a number of hostile surface-to-surface missiles using the new PAC-3 and guidance enhanced missiles.

— Various sources

Command Relationships

In theaters outside the continental US (OCONUS), the JFC normally assigns overall responsibility for air defense to a single commander designated the Area Air Defense Commander (AADC). Normally, the JFACC is designated the AADC. The AADC is responsible for integrating the entire air defense effort and is the component

commander with the capability to plan and execute integrated air defense operations with other air operations. The JFACC, dual-hatted as the AADC, has the responsibility to integrate the counterair effort, offensive and defensive, from all components into one cohesive effort. The JFACC also has the capability to coordinate space and surface forces (e.g., battlefield coordination detachments, liaison officers, and security forces) to cover the entire layered defense approach.

Within North America, North American Aerospace Defense Command (NORAD) provides air sovereignty, air warning, and air defense. Each NORAD region has a commander, triple-hatted as JFACC, Airspace Control Authority, and AADC. US Strategic Command supports NORAD by providing the necessary missile warning and space surveillance.

CHAPTER FIVE

PASSIVE DEFENSE OPERATIONS

We saw figures running wildly in confusion over the fields. Greenish-gray clouds swept down upon them, turning yellow as they traveled over the country blasting everything they touched and shriveling up the vegetation. No human courage could face such a peril. Then there staggered into our midst French soldiers, blinded, coughing, chests heaving, faces an ugly purple color, lips speechless with agony, and behind them the gas-soaked trenches, we learned that they had left hundreds of dead and dying comrades. It was the most fiendish and wicked thing I have ever seen.

—Description of German chlorine gas attack at Ypres, 22 April 1915
O. S. Watkins

GENERAL FRAMEWORK

Despite the best efforts of CBRN proliferation prevention, counterforce, and active defense measures, some enemy weapons may reach their targets. CBRN passive defense measures improve the abilities of personnel to survive and sustain operations in a contaminated environment. Commanders will assess the threat in relation to the mission and determine appropriate passive defense measures. Passive defense measures maximize the ability to survive and operate in a contaminated environment through proper planning, training, risk assessment, and vulnerability and hazard mitigation. The extensive nature of CBRN contamination makes tactical-level passive defense requirements the responsibility of every Airman.

In the event of a CBRN attack, the operations tempo of an installation may decrease due to degradation in the ability to perform the mission. A well-planned strategy will facilitate a more rapid return of operations tempo, especially if assisted by advanced warning. Passive defense measures do this by reducing vulnerability and minimizing the effects of WMD employed against US and host nation installations and facilities, interests, points of embarkation and debarkation, and critical infrastructure. Passive defense will assist ground, air, and space forces to continue operations despite the presence of CBRN agents.

PASSIVE DEFENSE ACTIVITIES

Passive defense activities are conducted to enable a commander to neutralize, contain, and/or manage the effects of CBRN attacks on an Air Force installation or area

of interest. To achieve these objectives, commanders should implement passive defense measures appropriate to the threat, location of installation, and availability of resources. These measures may include the following: 1) facility hardening, 2) evacuation, 3) individual and collective protection, 4) detection and identification, 5) warning systems, 6) contamination avoidance, 7) contamination control, 8) decontamination, 9) health risk assessments, 10) medical surveillance, and 11) medical countermeasures. A "one size fits all passive defense" is not possible. Individual CBRN effects may be significantly different and often require unique strategies and procedures. For example, counter-biological vaccines and restriction of movement strategies designed to contain disease outbreaks are unlikely to be useful against chemical, radiological, or nuclear effects. Likewise, the protection provided by existing mission-oriented protective posture (MOPP) equipment is not uniform across the CBRN spectrum. In general, CBRN detection systems, computer-based warning systems and reporting tools, and various levels of decontamination capabilities reduce the effects of an attack. These passive defense activities and measures should be applied in a layered and tailored approach to facilitate a comprehensive response. All activities/measures fall under one or more components of the passive defense framework, which consists of sensing, shaping, shielding, and sustainment. While these activities normally occur at the installation level, the COMAFFOR should be aware of and ensure the emplacement and employment of theater-wide passive defense capabilities. The passive defense pillar is comprised of four tenets: Sense, Shape, Shield, and Sustain.

Sense

Passive defense activities provide a commander with up-to-date information on CBRN threats by detecting, identifying, and qualifying/quantifying hazards. Obtaining this information requires accurate intelligence assessments in a number of areas, to include sampling, detection, and identification.

CBRN detection, sampling, and identification are multifaceted and multifunctional operations and include CBRN point and stand-off detection systems; medical, food, and water surveillance; and pre- and post-attack reconnaissance for explosive ordnance detection by unit and installation post-attack reconnaissance teams. Samples collected for real-time identification, typically detected and collected by civil engineering, bioenvironmental engineering, and/or medical forces, provide evidence of a CBRN attack and may trigger passive defense or consequence management responses. Point detection systems continue to improve and incorporate rapid identification capabilities.

Epidemiological surveillance conducted by public health and medical personnel also contributes to detecting biological weapons exposure, low-level chemical agent exposure (below current instrument detection levels), or radiation exposure. Airmen serve as a key component of the sensing architecture. All Airmen must recognize their role as a CBRN "sensor." They should be trained to sense indications of impending or actual CBRN attacks, report those indications, and take the immediate and prudent actions necessary to protect themselves and mission resources.

Shape

Shaping is the characterization of CBRN hazards to accurately describe the current and future operational picture to the commander. Passive defense activities that allow a commander to shape the operational environment include CBRN effects predictions, meteorological condition assessments, gaining situational awareness and predicting future events, establishing protected beddown locations to mitigate CBRN effects, and identifying health risks to ensure a fit and healthy fighting force.

Prediction, in combination with detection, identification, and quantification, provides commanders with a clear delineation of clean and contaminated areas. Intelligence, civil engineering, and weather experts provide predictions on the nature of the threat. For meteorological condition assessments; weather experts supply information on terrain, weather conditions and other meteorological data, while CE readiness CBRN experts provide accurate predictions about the type of agent, release point, and the plume (footprint of the contaminated area).

Predictive modeling under differing meteorological conditions helps a commander prepare responses to a range of possible scenarios. Meteorological conditions such as temperature, cloud cover, rainfall, and wind speed may impact the effectiveness of CBRN attacks and persistence of contamination. Analyzing the potential meteorological effects on unit operations is key to an effective response. Additionally, adverse weather such as storms may severely affect a unit's passive defense actions and impact an adversary's ability to employ CBRN weapons effectively. The Air Force must be able to produce real-time data on current weather conditions pre-, trans-, and post-CBRN attack to determine what conditions might affect plume patterns and persistence of a CBRN agent. Accurate and timely meteorological assessments also contribute to effective sampling, detection, and identification of CBRN agents.

Gaining and maintaining situational awareness of the CBRN threat is critical in predicting the potential future degradation of operations and allows the commander to optimize offensive and defensive operations. Integrating information gained in the "sense" passive defense component is critical in shaping the commander's view of the operational battle space.

Location planning is necessary for the beddown of forces and mission parameters. Site development concerns are also critical to optimizing the ability to support passive defense operations. The physical features of a region should be factored into passive defense planning, as different geographical features will affect the potential for sensing CBRN agents and alter the spread of the CBRN contamination.

Despite the threat of or existence of CBRN threats, commanders should accurately identify the health risks associated with each potential CBRN agent. Accurate assessment via the installation medical intelligence/public health emergency officer, bioenvironmental engineer, and CE readiness personnel allow the commander to consider each agent in its proper context, establish a risk priority, and make informed risk management decisions.

Shield

Shielding includes protecting forces from harmful effects and hazards of CBRN threats. Shielding may be accomplished through activities including the administration of vaccines and prophylaxis (to prevent, mitigate, and minimize CBRN exposure effects), or contamination avoidance to prevent or reduce exposures. Passive defense activities which allow a commander to shield warfighting forces include disease and casualty prevention, contamination avoidance, contamination control, and protective countermeasures.

Pyridostigmine – Nerve Agent Pretreatment

In the late 1980s, the United States, following the example of Great Britain, stocked the compound pyridostigmine for its combat units as a wartime contingency pretreatment adjunct for nerve agent exposure. Several other allies, including most members of the NATO, did so as well. At the recommended dose, pyridostigmine is free of performance-limiting side effects. Unfortunately, pyridostigmine by itself is ineffective as a pretreatment against subsequent nerve agent exposure and thus it is not a true pretreatment compound. Pyridostigmine pretreatment does provide greatly improved protection against soman [nerve agent] exposure, however, when combined with postexposure antidote therapy. For this reason, pyridostigmine is classified as a pretreatment adjunct.

***—Textbook of Military Medicine: Medical Aspects of Chemical and Biological Warfare,* Office of the Surgeon General, United States Army, 1997**

Disease and casualty prevention include steps taken to prevent casualties before attack and minimize casualties after a CBRN attack. Good health and hygiene, vaccines, and prophylaxis increase the survivability of the forces. The commander should optimize the appropriate level and type of protection based upon current intelligence, the specific hazard of the CBRN agent, the quantity of the agent dispersed, weather conditions, and the location of the attack or potential attack.

Contamination avoidance includes actions taken to minimize the impact of CBRN attacks by eliminating exposure to contamination. Successful contamination avoidance results from a combination of dispersal, prediction, sampling and identification, marking, rerouting equipment and materials, and protective countermeasures, such as sheltering people and providing hardening for facilities and critical equipment. Before an attack occurs, it is important to disperse mission critical assets to enhance the probability that some facilities and equipment will escape contamination. Dispersal includes transporting mission-essential personnel and equipment from high-risk to low-risk areas for survival, recovery, and reconstitution. Permanent and expedient hardening measures are used to strengthen buildings and utility systems or provide barriers to resist the destructive effects of weapons on aircraft and equipment. Successful hardening measures will protect people and weapons systems from explosive weapon effects. Permanent hardening may be incorporated into structures during initial

construction or added later as a modification or retrofit. Expedient hardening, such as the rapid erection of sandbag walls or building soil berms, is the primary hardening method for expeditionary forces.

While operating in a CBRN environment, contamination control prevents secondary transfer of disease, chemical, biological or radiological material, and/or re-aerosolization of an agent. Contamination control includes avoiding, reducing, removing, or rendering harmless the hazards from CBRN contamination. As part of the contamination control process, decontamination operations are intended to help sustain operations by preventing or minimizing performance degradation, casualties, or loss of materiel.

If CBRN contamination is found on equipment, facilities, or terrain, the area must be marked to identify areas for possible decontamination. Personnel must be alerted to avoid the area to reduce the spread of contaminants and avoid unnecessary contamination. If contamination is too great, or the contamination received negatively impacts the mission, relocation or rerouting of equipment and material may be necessary to survive and recover from an attack. For air and space forces, although unlikely, this may require relocating operations to a different base and transporting non-contaminated assets to an alternative location. Diverting aircraft to an uncontaminated airfield prevents the spread of contaminants to valuable airlift assets and cargo.

When contamination is unavoidable, protective countermeasures allow Air Force forces to survive and operate in a CBRN environment. It is important to plan for and develop these protective countermeasures prior to CBRN attack. The commander should optimize the appropriate level of protection based upon the specific threat (type, quantity, hazard, and means of delivery), anticipated warning time, duration of exposure, and the actual or projected attack location. Protective countermeasures include restriction of movement (to limit exposure of forces to hazardous agents via limiting interactions between personnel, restricting large gatherings, closing facilities, quarantining, and isolating), shelters (or collective protection), immunizations and chemoprophylaxis, masks, personal protective equipment (PPE), and individual protective equipment (IPE). If forces have advance warning of an attack, personnel protective measures and MOPP gear can increase survivability of the forces during operations. However, the occurrence of a biological attack may not be determined until personnel become symptomatic, in which case personnel protective measures may be of little use.

Split-MOPP Concept

This tactic divides the airbase into multiple sectors or control zones and assigns threat-based protective actions and MOPP for each area that's independent from one another. It provides commanders with the flexibility to respond to threats in specific areas and continue operations within areas unaffected by the incident or at lower risk from the threat. Your unit control center controls your movement between one sector and another. Ensure you understand what alarm condition and MOPP level applies before entering a sector or zone.

—AFMAN 10-2602, *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards, 29 May 2003*

Sustain

It may be imperative to sustain combat operations in a contaminated environment. Some passive defense activities which enable a commander to sustain operations may duplicate activities in the consequence management pillar, since both passive defense and consequence management are conducted simultaneously across the spectrum of pre-, trans-, and post-attack. Regardless of where a planner decides to define an activity, operations will continue by conducting specific passive defense and consequence management activities to facilitate the return to operational capability as soon as possible. These activities include post-attack reconnaissance to identify hazardous areas, notifying personnel, and decontaminating and managing casualties, as needed.

Decontamination and health risk assessments are important first steps toward a return to pre-attack operational capability. If assets could not be covered or protected from the CBRN attack, priority must be given to those personnel and equipment most needed for combat effectiveness. There is ongoing research in the area of fast and effective decontamination solutions and techniques. The commander, and appropriate subject matter experts, should be aware of the latest cutting-edge technologies, approved for use by DoD, to rapidly decontaminate critical assets and personnel.

Post-attack health risk assessment, typically accomplished by bioenvironmental engineering forces, provides critical guidance to commanders. Accurate assessment of health risk via the installation aerospace medicine team should allow the commander to make informed risk management decisions.

Long-term health risks due to exposure to low levels of residual contamination must also be considered. Even after thorough decontamination, formerly contaminated assets may pose a long-term health risk to personnel. Commanders must ensure all appropriate assets are marked as formerly contaminated, contamination and decontamination is annotated in vehicle/equipment life-cycle historical documents, and personnel medical records are documented with agent type, detector reading, MOPP level, and exposure times.

Immediate medical actions are important to personnel survivability and operability in the post-CBRN attack phase. Casualty management involves triaging, treating, stabilizing, and transporting the victims of CBRN attacks, which appear in the consequence management chapter of this doctrine. However, the full spectrum of C-CBRN operations will include medical activities that may be applied throughout both passive defense and consequence management operations, such as self aid and buddy care (see Air Force Instruction (AFI) 36-2238, *Self-Aid and Buddy Care Training* and AFH 36-2218, Volume 2, *Self Aid and Buddy Care Student Handbook*).

Commanders, through medical and services personnel, must also be prepared to care for contaminated casualties and human remains. In addition to challenges within the theater of operations, medical evacuation and return of deceased personnel could be problematic due to potential prohibitions on overflight and landing imposed by other nations.

[Before the Gulf War] [w]e maintained an interest by scaring people. We did training, but in many cases it was rote. Everybody went through the motions. You knew you had to put on your protective mask and overgarment in X amount of time. The Gulf War changed all that. It put a real focus on chemical-biological operations. Suddenly, the specter was real, due to the fact that we were up against someone who could truly use it against us.

Since Desert Storm, the military has made marked progress on two fronts – awareness and technology. Units now train more frequently with chemical and biological defense equipment that, in the past, was locked away and issued only occasionally. Today, service members do their jobs while wearing protective equipment.

This is now just another facet of being a Soldier, Sailor, Airman or Marine that you have to assimilate into the rest of your military skills. We realized that's how we're going to fight, so we started training that way.

—US Army Col John V. Wade, former medical chemical-biological warfare adviser to Gen Norman Schwartzkopf, Desert Storm Commander, In Linda D. Kozaryn's "Knowledge Key to Combating Chemical, Biological Warfare," American Forces Information Service, 1999

Operating effectively in a contaminated environment may be critical to mission success. Proper planning in the sense, shape, and shield areas prior to CBRN attack will ensure that the sustain aspect of passive defense is successfully accomplished.

PLANNING CONSIDERATIONS

Commander implementation of the passive defense framework requires careful attention to the following planning considerations, each of which falls under one or more framework components.

Joint, Coalition, and Host Nation Operations Planning

The Air Force should plan to support C-CBRN operations as part of a joint and coalition force and with host nation forces who may provide additional valuable resources, but may also add new vulnerabilities. Commanders must fully understand joint and allied capabilities, requirements, and potential limitations regarding C-CBRN operations to make the most effective use of existing defense assets to protect essential mission activities. To the extent that joint or allied forces provide mission critical functions, commanders must either plan and train for provision of passive defense measures that sustain these functions or provision of these functions independent of joint or allied forces. To facilitate this support, joint equipment and procedural concepts should be established and documented in appropriate publications, such as JP 3-41, *CBRN, and High-Yield Explosive Consequence Management* and JP 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction*.

Manpower

Contractor or host nation personnel are often utilized to provide valuable functions and services on military installations, including support of passive defense operations. Commanders must be prepared to protect all non-military personnel in the event of a CBRN attack or incident and must account for this protection in passive defense plans and training activities. To the extent that contractors or host nation personnel provide mission-critical functions, commanders must either plan and train for provision of passive defense measures that sustain these functions or provision of these functions independent of these non-military personnel. The contractor or host nation roles should be defined within memorandums of understanding, memorandums of agreement, and/or statements of work.

CHAPTER SIX

CONSEQUENCE MANAGEMENT OPERATIONS

On 3 December, 1984, poison gas leaked from a Union Carbide factory in Bhopal, India, killing thousands. Most research organizations put the toll at about 8,000…in the first week. The plant once manufactured pesticides, using chemicals similar to those used in chemical warfare agent production. There were no detection or warning systems, no response plans, and no protective equipment. By the time the residents realized there was a problem and relayed it to the Union Carbide factory, there wasn't much that could be done, other than collecting and burying the dead.

— Various Sources

GENERAL FRAMEWORK

A CBRN event can occur via wartime attack, terrorist attack, or accident, and the COMAFFOR will likely deal with managing the consequences of the event. Consequence management (CM) is principally applied after a CBRN event occurs. CM is defined as:

> Actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents. Also called CM. (JP 1-02 and JP 3-41)

In addition, the Air Force C-CBRN Council approved the following definition:

> Consequence management activities serve to reduce the effects of a CBRN attack or event and assist in the restoration of essential operations and services at home and abroad in a permissive environment

CBRN attacks or incidents may generate a wide variety of effects that greatly complicate planning and preparations for CM activities. Nuclear events create a significant degree of physical damage. Chemical, biological, and radiological incidents may result in short or long-term residual contamination hazards, but may create little or no physical damage. All CBRN events will likely challenge existing capabilities to manage casualties and continue or restore operations. Regardless of the specific CBRN event involved, there are effectively three phases to dealing with the

consequences of an event: casualty management, remediation of the affected area, and restoration of essential services.

CONSEQUENCE MANAGEMENT ACTIVITIES

The purpose of CM operations is to quickly get the CBRN incident under control in order to minimize the long-term impact on an Air Force installation's ability to conduct operations. The primary activities that comprise CM are specific to the three phases listed above. Within CONUS, many local state and federal agencies will be involved. Agreements and plans must be established and exercised fully to ensure integrated and efficient operation during real-world incidents.

Casualty Management

Casualty management involves self-aid and buddy care, patient identification, stabilization, medical treatment, rehabilitation, and transportation of victims of CBRN attacks, if necessary, to a higher level of care. Although medical activities occur throughout the full spectrum of C-CBRN operations, the majority of casualty management activities, including medical response, occur during CM.

In addition to physiological ailments, victims of CBRN attacks may suffer from psychological disorders including acute stress, panic, and post-traumatic stress syndrome, the effects of which may not be apparent for weeks, months, or even years after an attack. Symptoms of psychological disorders range from anxiety due to fear of exposure to long-term stress that deteriorates physical and mental health.

Post-attack victim transport

It is likely that these psychological effects are an adversary objective for CBRN attacks against military and civilian targets alike. The actual physical damage suffered in a CBRN attack can vary significantly. In many cases, however, the adversary, particularly if a terrorist, may aim to achieve a psychological impact that exceeds the physical damage caused.

Chaplains and chaplain assistants, serving as religious support teams, perform a significant role in casualty management. These individuals bolster our forces and dependents by providing direct spiritual care and the free exercise of religion. Chaplains and assistants also advise commanders concerning morale, ethical, and moral issues. The trauma of CBRN events will likely intensify the need for spiritual counseling and religious support. Military chaplains are uniquely trained, of all clergy, to operate in hostile, dangerous, and other military environments. Chaplains and chaplain

assistants must be included in planning and training for ministry operations in CBRN CM.

Remediation

As part of CBRN CM operations, commanders will undertake long-term remediation to return Air Force equipment and facilities to pre-attack levels, if possible. On-scene remediation activities are designed to remove unexploded ordnance and reduce, remove, or neutralize contamination within affected areas and enable return to normal operations. The goal is to enable personnel to operate within these areas without protective equipment; however, some residual hazards may remain. Personnel must be observant for hazards such as unexploded ordnance. They may be required to wear protective equipment when near contaminated surfaces and equipment to avoid exposure to toxic chemical agents. In the event CM activities are in response to an accident, ensure appropriate care and actions are taken to allow investigations to be conducted properly.

Remediation activities begin with post-attack reconnaissance and reporting, detection, and sampling in order to determine the extent of any CBRN hazard and the effects to human health and the environment. Commanders also may conduct marking and modeling to determine if there is a downwind hazard as a result of an attack. Commanders will need to mark, report, and track all equipment and facilities affected by a CBRN attack and document the procedures taken to contain contamination.

As part of CBRN CM operations, commanders may need to decontaminate personnel, equipment, aircraft, terrain, and facilities. Decontamination requirements and methods will vary for chemical, biological, radiological, and nuclear weapons. For example, following a chemical attack, decontamination activities and procedures will be based on whether the attack took place inside a facility or outdoors. Depending upon the extent and type of contamination, commanders may need to seek assistance from other organizations such as other military facilities, specialized units, local agencies, or civilian contractors. Examples of specialized units for CM operations include the US Army Chemical Corps, the US Marine Corps Chemical-Biological Incident Response Force, the National Guard Bureau Civil Support Teams and CBRN Enhanced Response Force Package, and the 20th Support Command CBRNE.

Another part of long-term remediation is the management and disposal of hazardous waste. Commanders will need to mark, track, and report on the process for disposing of hazardous waste, which will vary for chemical, biological, radiological, and nuclear materials.

Restoration of Essential Services

As part of CM operations, the Air Force is responsible for the restoration of essential services on its installations. These services include security; health services; housing; potable water; electrical power for lighting, heating, air conditioning, telecommunication, and other utilities; and a sustainable food supply.

PLANNING CONSIDERATIONS

In dealing with a CBRN event, including TICs and TIMs, there are two primary situations facing the COMAFFOR: the effects of the event on an installation and the effects of the event on the military forces/civilian population off the installation. Off-installation forces and civilians can be those in the homeland or in a foreign nation.

When responding to an off-installation event in the nation's homeland, the installation commander should attempt contact with higher headquarters for guidance on assistance to the civilian population. However, if time or circumstances do not permit contact, the installation commander may conduct an immediate response to save lives, prevent human suffering or mitigate great property damage. For further information refer to AFDD 2-10, *Homeland Operations*.

When responding to an off-installation event in a foreign country the same guidance applies for an immediate response. However, for foreign CM the installation commander must be sensitive to the political environment within the civilian community and the laws and policies governing a response. With the exception of the immediate response authority, the Department of State (DOS) is the lead federal agent (LFA) for foreign CM. As the LFA, DOS will coordinate US government CM activities in response to a request by a host nation.

If a CBRN event occurs on an installation where Air Force forces are present, one of the COMAFFOR's top priorities will be ensuring the safety and survival of personnel on the installation. The COMAFFOR may need to divert forces from other installations in the area of operations or request additional forces to deal with the effects of the event. These forces may range from medical assistance to health risk assessment to medical evacuation to decontamination and clean-up.

If the COMAFFOR is engaged in military operations in the Area of Operations, then another priority will be sustainment of operations. Factors to consider are:

- Can the operations at the affected installation be sustained? Can they be sustained with augmentation?
- Do the mission/forces of the installation need to be diverted to another installation?
- How soon can the affected installation return to mission capable status?
- How much effort must be diverted to do initial recovery of personnel and clean-up?

- How much effort must be expended to regenerate the installation to pre-event capability?

DOMESTIC CONSEQUENCE MANAGEMENT

A recent example of domestic CM is the response to the anthrax letters mailed through the US Postal Service in September 2001. Although there had been extensive biological warfare CM planning prior to the event, the complexity of the delivery system, combined with the regional dispersion and jurisdictional issues led to numerous challenges. A mere five postal letters containing tiny amounts of anthrax cost the US Government hundreds of millions of dollars to clean. It took over two years for the Brentwood Post Office to return to operation. The perpetrators have never been caught, nor is there a working model of who is responsible for this costly incident. The cleanup involved chlorine dioxide, which unnecessarily destroyed everything in the buildings where it was used. These are critical lessons-learned from what could have been an overwhelming public disaster. There were in excess of 7000 people potentially exposed. A comprehensive medical surveillance program combined with a solid public information campaign limited the number of casualties to five deaths and thirteen hospitalizations. Because of the integrated response plan of fire and law enforcement personnel, some key evidence was recovered to support the ongoing investigation of the anthrax attacks. Some highlights of the 2001 Anthrax CM response are:

- Rapid assessment and identification of the agent
- Potential hazard areas identified
- Preventive health measures started immediately
- Active public affairs plan to inform, quell rumors, and allay fears
- Deliberate and thorough decontamination procedures using the latest technology
- Focal point for reporting laboratory analysis results
- No one organization could do it all. A combination of local, state, federal, and military was required

Military support included sampling, packaging, planning guidance, security, agent analysis, and a reach-back capability to scientists for technical advice.

Conclusion: Prior planning at the time of the anthrax letter attack was clearly inadequate to cope with consequences which were extensive to manage and expensive to mitigate.

—Various Sources

The nature of the event should also be considered. The United States considers a terrorist attack (with or without CBRN) a crime and it must be investigated by appropriate authorities (normally the Department of Justice). The first priority of the

COMAFFOR should be the immediate response to save lives, but the criminal investigation will also begin immediately and the two may be conducted in parallel.

The COMAFFOR should advise senior leadership on the short-term and long-term future of the installation and impact on mission accomplishment. The installation may be damaged to such an extent that it is cost prohibitive to restore to pre-attack capability. In this case the COMAFFOR may advise that other installations take over the damaged installation's pre-attack responsibilities.

CHAPTER SEVEN

SUPPORT OPERATIONS

Logistics controls all campaigns and limits many.

—General Dwight D. Eisenhower
Supreme Allied Commander, WWII

C-CBRN activities require a broad range of support operations, including logistics, air mobility, health services, legal support, force protection, and many others. Support operations provide air and space forces the combat support capabilities to achieve desired results.

LOGISTICS AND SUSTAINING OPERATIONS

Logistical considerations, such as the flow of war materiel, are essential supporting elements of Air Force C-CBRN operations. Adversary CBRN operations present challenges to logistics support by introducing the threat of contamination to aircraft, mission critical assets, personnel, war materiel, and logistics. The COMAFFOR should ensure critical consumables reach the area of operations in a timely manner and provide needed weapons, supplies, and facilities in such a way as to reduce the "footprint" of deployed forces.

AIR MOBILITY

Air mobility forces play a crucial role in supporting Air Force C-CBRN efforts. In spite of an adversary's use of WMD, air mobility must continue to provide the Air Force with the global responsiveness necessary to achieve its objectives.

AF Airlift in a CBRN Contaminated Environment

To allow sustained and effective use of airlift resources, theater planners may have to identify alternate aerial ports of embarkation and/or debarkation to protect and continue the time-phased force and deployment data (TPFDD) airflow and other resupply efforts.

While air mobility forces are trained and equipped to operate in a CBRN-contaminated environment, the limitations imposed on air mobility assets in those environments may significantly degrade the rate of force deployment. For instance,

policies and procedures for large-frame aircraft decontamination have not been successfully established. Until large-frame aircraft decontamination is technically feasible, contaminated aircraft should be segregated from the airlift flow. If operations into a contaminated airfield are deemed mission-critical and are specifically authorized, the JFC should establish a geographically-separated transload site that can be used to transfer personnel and cargo between clean and contaminated aircraft. This transload process will likely delay TPFDD deliveries and may only be feasible for emergency or isolated cases. Research concerning policies and procedures should be conducted to develop the capability to operate contaminated and previously contaminated mobility assets without restriction.

Retrograde cargo from contaminated areas may be severely restricted. Until internationally recognized standards and legal requirements for acceptable decontamination levels are established, nations may deny transit and overflight rights to contaminated aircraft or cargo.

Aeromedical Evacuation (AE)

The Air Force's AE capability to move contaminated patients should only be used in extreme circumstances. Potential aircraft contamination, threats to aircrew safety, and limited availability of protective resources significantly restrict the ability to move large number of patients, contaminated or otherwise. In fact, treatment-in-place using contagious casualty management (CCM) capabilities is preferred. This is normally accomplished via deployed expeditionary medical support (EMEDS) CCM specialty set or can be done expeditiously using existing theater assets redeployed by the COMAFFOR to assist with the management of contagious casualties.

AE patient loading

Air Mobility Command (AMC) can move a limited number of biologically-contaminated patients to CONUS via litter-based isolation units after the patient has been stabilized. This will facilitate "hands-on" disease analysis by Department of Defense (DOD) and other US infectious disease experts to determine optimum management of biological casualties. Patients exposed to non-contagious biological agents can also be decontaminated and transported on aircraft. Basic infection control guidelines should apply when biological warfare casualties are evacuated. Chemically or radiologically contaminated casualties must be decontaminated before entering the AE system unless the theater and US Transportation Command (USTRANSCOM) commanders direct otherwise. When directed, the AMC commander is the formal policy waiver authority for movement of contaminated casualties. Once the theater combatant commander and USTRANSCOM identify the requirements for AE of contaminated patients, AMC will authorize their transportation.

Evacuating potentially contaminated patients, as well as non-contaminated patients, requires the approval of the destination country, overflight privileges, and approval of any country where the aircraft will land for servicing. Close coordination between the supporting and supported commanders and the Departments of Defense and State will be required for such movements.

Commercial Aviation

Commercial aviation plays an important role in the deployment, sustainment, and redeployment of Air Force forces. Upon full activation of the Civil Reserve Air Fleet (CRAF), the civilian sector provides almost all of AMC's passenger-lift capability and a significant portion of its cargo airlift.

Civilian aircraft under DOD contracts and the CRAF may be deployed on a voluntary basis, but will not conduct operations on an air base that is under attack, potentially under attack, and/or contaminated at the time of flight arrival. Although commercial aircrews are issued ground crew chemical defense equipment for personal protection and trained to use it, they are neither trained nor equipped for flight operations in a contaminated environment. Upon warning of impending CBRN attack, every effort will be made to divert arriving commercial aircraft and launch those currently on the ground. Contaminated CRAF assets and civil aircraft under DOD contract will not be used, even if decontaminated to negligible levels. Currently no decontamination standards exist for international flights. En route transload of cargo and passengers from civilian carriers to military aircraft or other transportation modes (sealift, rail, trucks, etc.) may be required, involving decontamination procedures. Generally, civil aircraft will not be used to transport equipment with residual CBRN contamination due to safety and legal concerns.

Contractor Supported Aviation

Civilian contractor personnel provide essential maintenance support for USAF operational support airlift (OSA) aircraft (C-21, C-37, etc.). If contractor-supported OSA aircraft are deployed to medium and high threat areas, the USAF installation commander will provide contractor personnel with IPE and "just in time" training on IPE wear and CBRN passive defense TTPs. Commanders at the deployed location will integrate the civilian contractor personnel into the base defense plan and ensure that they are properly trained, equipped, and exercised.

HEALTH SERVICES

The Air Force Medical Service (AFMS) provides critical support in C-CBRN operations. In addition to post-attack casualty treatment (passive defense and consequence management operations) via fixed medical treatment facilities (MTF) or EMEDS facilities, the AFMS provides essential expertise for conducting medical intelligence, conducting medical surveillance, detecting and identifying CBRN threats, performing health risk assessments, to include food and water quality/vulnerability assessments, and decontamination.

These unique capabilities are provided by home station defense teams located at each of our main operating bases, as well as by various deployable teams (unit type code assets), such as the medical nuclear, biological, and chemical defense team. This team provides human health protection, support to medical facility operations, and prevention of acute and chronic health hazards resulting from a CBRN threat environment. The biological augmentation team performs rapid, specific pathogen/ infectious disease identification and risk analysis. The radioanalytical assessment team measures, analyzes and interprets environmental and occupational samples for radioactivity and provides expert guidance on the type and degree of radiological hazard. Finally, the Expeditionary Medical Decontamination Team removes, neutralizes or lowers the level of contamination from casualties prior to admission to MTFs.

The COMAFFOR must be aware of all AFMS capabilities and ensure the AF Forces Surgeon has the appropriate theater medical assets to support C-CBRN operations.

SERVICES SUPPORT

Continued operations during C-CBRN threats demand specific planning considerations for service support activities. Services personnel providing meals to forces should take all necessary steps to safeguard and protect food and bottled water assets during the pre-attack period. Commanders may choose to forego hot meal preparation during periods of intense conflict in CBRN threat areas and allow Services personnel to protect kitchen facilities from possible contamination. All efforts should be made to disperse and protect food assets from contamination, particularly meals ready-to-eat.

Services personnel should consider the hazards of a CBRN environment when developing shelters, reassignment of living quarters, and evacuation plans, and procuring food service support in the local area. These plans must include measures to protect personnel, equipment, materials and food from contamination.

In the deployed environment during extreme situations, it may be necessary to temporarily inter contaminated human remains. Prior to interment, mortuary personnel should be prepared to conduct standard processing procedures for contaminated remains. Temporary burial and decontamination of remains should follow guidelines stated in JP 4-06, *Mortuary Affairs in Joint Operations*. Geographic combatant commanders are responsible for ensuring the development of policies for the overall supervision of mortuary affairs matters. Upon return to CONUS of contaminated remains, protecting the health of service members and the public must take precedence over rapid repatriation.

The US Army, as executive agent for mortuary affairs, manages development of and obtains approval from the Chairman, Joint Chiefs of Staff (CJCS) for joint mortuary affairs doctrine, procedures, and training materials for use by all Services.

CHAPLAIN SERVICES

Chaplains and chaplain assistants serving as religious support teams, as discussed in Chapter Six, provide a significant support service to Air Force forces and dependents by providing for free exercise of religion and advising commanders concerning morale and ethical issues. CBRN events will intensify the need for chaplain support. Chaplain and chaplain assistant support requirements are included in military planning and training for ministry operations in CBRN events.

FORCE PROTECTION (FP)

FP is an inherent command responsibility and is critical for C-CBRN operations. FP requires a collaborative, integrated, cross-functional effort. Civil engineers (including explosive ordnance disposal teams, fire protection, and civil engineer readiness), Security Forces (SF), medical services (including bioenvironmental engineering and public health), communications, intelligence, and counterintelligence communities all play key roles in force protection.

SF, with its integrated base defense, is a key component of both active and passive C-CBRN defenses. In active defense operations, it provides a system of measures, like off-base patrolling, to defend against an adversary's use of CBRN weapons. In passive defense operations, a collaborative force protection program will identify vulnerabilities and mitigate the effects of CBRN weapons. To achieve adequate FP for C-CBRN, commanders at AF installations worldwide should develop effective security and emergency management programs. These programs must be designed to protect Service members, civilian employees, dependents, facilities, and equipment; minimize the loss or degradation of resources; and continue, sustain, and restore combat and combat support operational capability in an "all hazards" physical threat environment. These programs may require planned and integrated application of antiterrorism operations, physical security, operations security, and personal protective services. Commanders should ensure a fundamental emphasis on awareness of FP and emergency management challenges. Air Force personnel must be trained in basic skills necessary to survive and operate in a CBRN environment.

Active Defense Operations

Commanders at all levels need to be aware of all the forces that are affected by their FP decisions. Installation commanders have FP responsibility for forces whether or not they fall directly under the installation commander's chain of command or are confined to the boundaries of the installation. Tenants or transients are examples of forces that would normally fall under the FP responsibility of an installation commander. For additional information on force protection, see AFDD 2-4.1, *Force Protection*.

EMERGENCY MANAGEMENT

The Emergency Management Program includes activities to coordinate and organize efforts to manage, prepare for, respond to and recover from the direct and indirect consequences of CBRN and conventional weapon attacks, major accidents and natural disasters. Civil Engineer Readiness is the primary function supporting these actions through CBRN hazard analysis and assessments, establishment and operation of the CBRN point and standoff threat detection grid, active CBRN response, and development of CBRN contamination avoidance measures. The ancillary missions of the program are to support homeland security operations and to provide support to civil and host-nation authorities in accordance with DOD directives and through the appropriate combatant command.

The Air Force Incident Management System (AFIMS) is the organizational structure used by Air Force units worldwide to prepare for, respond to, and recover from attacks and emergencies. AFIMS was designed for compliance with the National Incident Management System and National Response Plan to maintain the unique military requirements for command, control and support mission requirements.

For additional information on the Air Force Emergency Management Program, see AFPD 10-25, *Emergency Management;* and AFI 10-2501, *Emergency Management Planning and Operations* (as of the publication date of this AFDD, AFPD 10-25 and AFI 10-2501 were in revision. HQ USAF/IL message [DTG 2215312 Dec 05] directed program name change from "Full Spectrum Threat Response" to "Emergency Management," effective immediately, and stated these documents are being revised).

INFRASTRUCTURE

Infrastructure includes the physical elements, structures, and systems subject to a CBRN related event or required to support remedial operations in the aftermath of a CBRN related event. To alleviate the impact of CBRN attacks, the AF must orient critical infrastructure protection planning toward protecting and sustaining mission-essential activities. CBRN contamination can be mitigated through maximum sheltering of infrastructure plus contamination avoidance. Air Force commanders must plan to mitigate the loss of key infrastructure.

LEGAL SUPPORT

International law largely prohibits the use of biological and chemical weapons, with the exception of some uses of riot control agents other than as a method of warfare, and bans the use of poisonous weapons. While no controlling international law prohibits the use of radiological or nuclear weapons, there are a number of governments worldwide that support non-proliferation to prohibit certain parties from possessing and trafficking in these weapons. Therefore, the use of such weapons would likely elicit a strong international response. Additionally, adversaries who employ CBRN against the US may deny their involvement.

Commanders need to understand and consider the potential legal ramifications of any decision to attack or destroy an adversary's CBRN capabilities. During operations, commanders should have access to a judge advocate and seek legal advice to avoid actions that may lead to excessive collateral damage in relation to the direct military advantage sought.

TOTAL FORCE

The Air Reserve Component (ARC), comprised of the Air National Guard and Air Force Reserve, are integral partners with the regular Air Force. Together with regular forces, the ARC plays a key role in protecting the homeland by providing states with access to specialized capabilities. The ARC's capabilities for C-CBRN operations include aerial spray (utilizing the Modular Aerial Spray System to lay down neutralizing C-CBRN materials), aerial refueling, cargo transport, emergency management, civil engineer, force protection, hazardous materials handling, device neutralization, detection and identification, casualty extraction, decontamination, legal counsel, and medical care.

PUBLIC AFFAIRS

Air Force public affairs operations support the C-CBRN mission by releasing information through public communication channels. This information serves to execute prevention and deterrence strategies, reinforce the effects of counterforce operations on adversary decision-making, mitigate unintended information effects of counterforce operations, and maintain public confidence in local, state, federal and military authorities during CM operations. Successful communication on C-CBRN activities requires a highly coordinated, multi-agency public affairs effort that is fully integrated into operational planning.

PERSONNEL SUPPORT FOR CONTINGENCY OPERATIONS (PERSCO)

The primary mission of PERSCO is force accountability and casualty reporting. PERSCO teams must be able to operate in a contaminated environment. Accurate force accounting will inform commanders about the availability of resources. PERSCO teams are normally an integral component of the location's reception processing center. Base subject matter experts at the employment location work with PERSCO teams to ensure that arriving personnel are briefed on emergency management actions, protective measures, threat conditions (including the CBRN threat), and the local area health condition.

Family Assistance Control Center (FACC)

Upon implementation of the base Comprehensive Emergency Management Plan, the Installation Commander will activate a FACC to serve as the focal point for family assistance services. The FACC, prescribed by DoDI 1342.22, *Family Centers,* and AFI 34-1101, *Assistance to Survivors of Persons Killed in Air Force Aviation Mishaps and Other Incidents,* serves as a staging area where families can obtain disaster relief,

contingency information, and services. The center's primary mission is to handle the practical and emotional needs of families of potential DoD casualties and DoD personnel affected by the disaster. The Airmen and Family Readiness Flight (AFRF) will be the focal point of dissemination of timely information for affected families excluding casualty notification. The AFRF must address FACC activation, sustainment and deactivation processes in the AFRF Family Readiness OPLAN.

AF Repatriation Guide for Airmen and Family Readiness Flight

The AF AFRF plays a critical role when DOD personnel are repatriated to safe haven locations. During the past several years we have seen an increasing number of authorized and/or ordered departures of DOD personnel from hot spots around the world. Since 9/11 we have seen even more authorized and/or ordered departures of families from OCONUS locations. Family Readiness NCOs/Program Managers, AFRF staff, and Reserve Family Readiness Directors have played a key role in assisting these families.

COMMAND AND CONTROL (C2) SYSTEMS

Effective and interoperable C2 systems are vital to planning and conducting successful C-CBRN operations. Air Force C2 requirements for C-CBRN operations may vary depending upon the type of operation, the nature of the threat, and the set of capabilities needed to counter the threat.

Centralized C2 is fundamental to air and space power. C2 systems are integrated in daily operations and warfighting operations and enable air and space forces to rapidly access and disseminate information and decisions. Due to their importance and the need for them to remain operational in adverse environments, C2 assets are likely targets. An adversary's ability to disrupt our decision loop can seriously limit a commander's C-CBRN options.

INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE (ISR)

Intelligence, surveillance, and reconnaissance are key elements of C-CBRN operations. ISR seeks to detect, identify, and track the development and deployment of adversary WMD. The unique signature of WMD devices and materials may require use of specialized detectors to complement traditional ISR platforms, such as the Global Hawk UAS and satellites. Vigilant surveillance may reveal production of large-scale biological or chemical weapons programs. Properly coordinated release of this information may support prevention or counterforce mitigation efforts by IO personnel.

ISR is a critical component of counterforce attack operations and plays a vital role in detecting, tracking, and warning of air and missile attacks for active defense operations. ISR enables passive defense operations by providing information on CBRN material warning and reporting, and supports a commander's ability to protect Air Force and allied forces. As with C2 assets, ISR assets must remain operational in adverse environments and are likely to be targeted by our adversaries.

CHAPTER EIGHT

COUNTER–CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR EDUCATION, TRAINING, AND EXERCISE

In February 2006, Air Force Chief of Staff, Gen T. Michael Moseley, approved the award of the civil engineer readiness occupational badge to graduates of the Civil Engineer Readiness Apprentice Course. The badge identifies course graduates as emergency management professionals and CBRN defense specialists. For the first time, civil engineer CBRN experts have a distinctive occupational badge that represents a unique Air Force capability and an invaluable resource for Air Force commanders.

—AF Link, Nov 6 06 (AFPN) #123032127

GENERAL FRAMEWORK

Due to the growing asymmetric threat confronting the Air Force, all Airmen must be fully prepared not only to survive in a CBRN environment, but to conduct operations as well. The Air Force C-CBRN Education, Training, and Exercise Program is a life-cycle approach that gives individuals the appropriate knowledge, skills, and abilities to operate in a CBRN environment. Vital education and training is delivered to every airman in a coherent fashion and subsequently reinforced directly through realistic exercises and wargames. This approach is crucial to the development of Air Force personnel in terms of what all Airmen need to know and be able to perform. The AF must institutionalize the C-CBRN mindset to enable Airmen to operate in a CBRN environment. Regardless of the area of responsibility (AOR), Airmen must possess the necessary knowledge and skills and abilities to maintain sortie generation and cargo throughput rates, as well as support operations in a CBRN environment. Success in the Homeland and on the battlefield requires personnel that are both competent and proficient.

The deliberate education, training, and exercise life-cycle is an integrated end-to-end (accession to separation/retirement) process that ensures each Airman receives the appropriate level of C-CBRN education and training, and perfects that knowledge and skill through robust exercises at each career stage.

EDUCATION

AF personnel must possess the appropriate knowledge to perform C-CBRN operations across the spectrum of military operations. Each Airman must possess an appropriate level of education, commensurate with rank and AF specialty, in CBRN

principles, threat environment, agent characteristics, and appropriate mitigation strategies in order to ensure an operational capability in a CBRN attack. Much of this education takes place in the various rank-specific Developmental Education courses, as well as courses required of selected specialties.

Success in C-CBRN operations requires the active participation of all members of the Air Force and thus, all Airmen must understand the nature of operating in a CBRN environment. Air Force personnel with responsibilities for C-CBRN functions should also be cognizant of C-CBRN capabilities of local agencies, other Services, allied, and coalition partners.

TRAINING

C-CBRN training programs are designed to provide Airmen with the basic skills necessary to function in a CBRN environment. Training programs should incorporate each C-CBRN pillar. Training programs are divided into three categories: accession training, operational training, and continuation/recurring training.

Accession Training

Accession training prepares members for service by providing indoctrination to the military culture, organization, and mission. The growing CBRN threat requires that accession training include the basic C-CBRN combat skills needed to survive and operate in a CBRN environment. Consistent with the education, training, and exercise life-cycle process, accession training provides foundational C-CBRN skills that Airmen will build upon throughout their careers.

Operational Training

Operational C-CBRN training builds upon the basic skills developed in accession training and provides the necessary technical skills to ensure mission accomplishment in a CBRN environment. Formal training provides individuals with the knowledge and skills to perform their duty assignments effectively. While accession training provides the initial training, operational training offer the advanced level of training to continue operations within a CBRN environment.

Continuation/Recurring Training

Continuation or recurring training maintains and refines skills necessary for a unit to conduct their mission in a CBRN-threatened or contaminated environment. This training should provide the means to keep Air Force personnel current on changes in C-CBRN policies and procedures. Additionally, it will prepare them for increased responsibility, to include training others, leading forces, and planning C-CBRN operations.

Continuation training normally occurs at the installation level, including ancillary training. For example, individuals, teams, and leaders/supervisors enhance their

knowledge, skills, and abilities through the CBRNE Defense Training Course, specialized team training, and CBRNE Defense Senior Leaders Course. These courses provide training on how to perform detection, identification, prediction, marking, decontamination, and health risk assessments of CBRN agents. Training for the base populace may also include IPE and PPE training, protective countermeasure training, and collective protection procedural training. See AFI 10-2501, *Emergency Management Planning and Operations*, for a complete list of emergency management training courses and target audiences.

Commanders must ensure their units are trained and able to perform in CBRN threat environments throughout the spectrum of conflict. Continuation training enables a commander to assess organizational capabilities and to maintain the unit's ability to survive and operate in CBRN threat environments.

EXERCISES AND WARGAMES

To ensure effectiveness, C-CBRN education and training must be validated through exercises and wargames using time-tested principles and experience. Providing an exercise environment for Airmen to hone C-CBRN knowledge and skills is critical. Exercises and wargames serve as effective methods of developing both individual experience and organizational capabilities under controlled conditions. In addition to providing instruction, they may also aid in evaluating performance and the effectiveness of training and education programs.

Exercises should include a realistic CBRN element and require participants to demonstrate their skills in personal protection, performing wartime functions and working together as an integrated unit in a simulated CBRN contaminated area. C-CBRN exercises and wargames should emphasize all aspects of CM and operations in a CBRN environment, to include: command and control; emergency management; intelligence, surveillance, and post-attack reconnaissance; planning; logistics; medical response; force protection; and individual and collective protection. When possible, Air Force units should also conduct joint, allied, and coalition C-CBRN exercises to develop and improve interoperability.

Wargames emphasize critical thinking and are most useful for indoctrinating C-CBRN education. C-CBRN principles, decision tools, and TTPs must be integrated into all significant wargames to offer additional opportunities to develop and evaluate C-CBRN competencies of individuals and organizations. Commanders should continually assess the impact of training and wargames on their units' abilities to conduct wartime missions.

Kunsan Focused Effort – April 2005

The 8th Fighter Wing (Wolf Pack), Kunsan Air Base (AB), Republic of South Korea, "tested its ability to sustain mission operations in a biological warfare environment and… [evaluated how effectively it could recover from an unconventional biological attack]…during the first-ever Kunsan Focused Effort [KFE] exercise, which ran from April 26 to 28." According to chief of the Air Force Counterproliferation Division at the Pentagon, Kunsan AB was used "as a test bed for policy, procedures and guidance to help the greater Air Force if faced with a…[biological]…incident." "Biological agents pose unique challenges to operations at places like Kunsan due to the varied means enemy forces can deliver deadly or incapacitating amounts of bacteria, viruses and toxins."

The Wolf Pack has been called the "petri dish" for this project and was chosen due to "…the operational nature of the base, the immediate threat, and the…closed and isolated nature of Kunsan." "The KFE team…made four visits to Kunsan working different stages of the project…[and]…ended their data gathering phase with…[the]…field training exercise. The team looked at numerous areas, particularly the impact of reducing the work force due to biological casualties. According to the team chief, "…the problem with bio is it takes people out of the work force and causes… [the wing]…to have to continue to operate with less." For the exercise, 20% of Kunsan manning was eliminated.

The Wolf Pack rose to the challenge, took the KFE very seriously, and, according to the team chief, they performed very well. The results of the KFE at Kunsan will be the CONOPS [Concept of Operations] – operational guidance on how to deal with a biological attack and what a wing needs to do to survive and operate in this scenario. Hopefully, the contribution by the 8th Fighter Wing will help others survive in case of a biological attack.

—*WOLF PACK WARRIOR* Newspaper, May 6, 2005
and *AFN Korea.net,* September 29, 2005

The threat of a CBRN attack on Air Force operations demands implementing and employing effective C-CBRN education, training, and exercise. Airmen must possess an appropriate level of C-CBRN education, training, and exercise at each stage of their careers. C-CBRN education, training, and exercise must include realistic survive-to-operate exercises, basic instruction, in-depth scenarios, and cross-functional involvement to be effective.

SUGGESTED READINGS

Air Force Publications (Note: All Air Force doctrine documents are available on the Air Force Doctrine Center web page at https://www.doctrine.af.mil; All Air Land Sea Application (ALSA) documents [AFTTP(I)s] are available on their website https://wwwmil.alsa.mil/index.html)

AFDD 1, *Air Force Basic Doctrine*

AFDD 2, *Operations and Organization*

AFDD 2-4, *Combat Support*

AFDD 2-4.1, *Force Protection*

AFDD 2-10, *Homeland Operations*

AFH 36-2218, Volume 2, *Self Aid and Buddy Care Student Handbook*

AFI 10-2501, *Full Spectrum Threat Response (FSTR) Planning and Operations* (currently under revision and name will change to reflect program name change from "*FSTR*" to "*Emergency Management*," per HQ USAF/IL message, DTG 22153Z Dec 05)

AFI 10-2603, *Emergency Health Powers on Air Force Installations*

AFI 10-2604, *Disease Containment Planning Guidance*

AFI 34-242, *Mortuary Affairs Program*

AFI 34-1101, *Assistance to Survivors of Persons Killed in Air Force Aviation Mishaps and Other Incidents*

AFI 36-2238, *Self-Aid and Buddy Care Training*

AFMAN 10-100, *Airman's Manual*

AFMAN 10-2602, *Nuclear, Biological, Chemical and Conventional (NBCC) Defense Operations and Standards*

AFPD 10-25, *Full Spectrum Threat Response* (currently under revision and name will change to reflect program name change from "*FSTR*" to "*Emergency Management*," per HQ USAF/IL message, DTG 22153Z Dec 05)

AFPD 10-26, *Counter-Nuclear, Biological, and Chemical Operational Preparedness*

AFTTP (I) 3-2.33, *Nuclear, Biological, and Chemical Defense of Theater Fixed Sites, Ports, and Airfields*

AFTTP (I) 3-2.35*, Multiservice Tactics, Techniques, and Procedures for Special Operations Forces in Nuclear, Biological, and Chemical Environments*
AFTTP (I) 3-2.37, *Nuclear, Biological, and Chemical Aspects of Consequence Management*

AFTTP (I) 3-2.42, *Nuclear, Biological, and Chemical Defense Operations*

AFTTP (I) 3-2.44, *Nuclear, Biological, and Chemical Reconnaissance*

AFTTP (I) 3-2.46, *Nuclear, Biological, and Chemical Protection*

AFTTP (I) 3-2.52, *Biological Surveillance*

AFTTP (I) 3-2.54, *Nuclear, Biological, and Chemical Vulnerability Analysis*

AFTTP (I) 3-2.55, *Potential Military Chemical/Biological Agents and Compounds*

AFTTP (I) 3-2.56, *Chemical, Biological, Radiological and Nuclear Contamination Avoidance*

AFTTP (I) 3-2.60, *Chemical, Biological, Radiological and Nuclear Decontamination*

USAF Counter-Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (C-CBRNE) Master Plan

USAF Strategic Planning Directive for Fiscal Years 2006-2023

Joint Publications

JP 3-01, *Joint Doctrine for Countering Air and Missile Threats*

JP 3-10, *Joint Security Operations in Theater*

JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments*

JP 3-26, *Homeland Security*

JP 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction*

JP 3-41, *Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Consequence Management*

JP 3-60, *Joint Doctrine for Targeting.*

JP 4-06, *Mortuary Affairs in Joint Operations*

DOD Publications

DODI 1342.22, *Family Centers*

DODI 2000.18, *Department of Defense Installation Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Emergency Response Guidelines*

CJCS CONPLAN 0400-00, Counterproliferation of Weapons of Mass Destruction (S) (Draft)

The National Defense Strategy of the United States of America.

National Military Strategic Plan for the War on Terrorism.

National Military Strategy to Combat Weapons of Mass Destruction.

The National Military Strategy of the United States of America.

Quadrennial Defense Review Report.

National Publications

The National Response Plan. US Department of Homeland Security.

The National Security Strategy of the United States of America.

National Strategy to Combat Weapons of Mass Destruction.

National Strategy for Homeland Security.

National Strategy for Combating Terrorism.

Other Publications

Alibek, Ken and Handelman, Stephen, *Biohazard: The Chilling True Story of the Largest Biological Weapons Program in the World—Told by the Man Who Ran It* (Random House). 1999.

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GLOSSARY

Abbreviations and Acronyms

AADC	area air defense commander
AB	air base
AE	aeromedical evacuation
AFDD	Air Force doctrine document
AFI	Air Force instruction
AFIMS	Air Force Incident Management System
AFMS	Air Force Medical Service
AFRF	Airmen and Family Readiness Flight
ALSA	Air Land Sea Application Center
AMC	Air Mobility Command
AOC	air and space operations center
AOR	area of responsibility
ARC	Air Reserve Component
C2	command and control
CAOC	combined air and space operations center
CBRN	chemical, biological, radiological, and nuclear
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives
C-CBRN	counter-chemical, biological, radiological, and nuclear
C-CBRNE	counter-chemical, biological, radiological, nuclear and high-yield explosives
CCM	contagious casualty management
CE	civil engineer
CFACC	combined force air and space component commander
CJCS	Chairman, Joint Chiefs of Staff
CM	consequence management
COCOM	combatant command
COG	center of gravity
COMAFFOR	commander, Air Force forces
CONOPS	Concept of Operations
CONUS	continental United States
CRAF	Civil Reserve Air Fleet
DCA	defensive counterair
DOD	Department of Defense
DOS	Department of State
DSCA	defense support of civil authorities
EMEDS	expeditionary medical support

FACC	Family Assistance Control Center
FP	force protection
IO	information operations
IPE	individual protective equipment
ISR	intelligence, surveillance, and reconnaissance
JAOC	joint air and space operations center
JFACC	joint force air and space component commander
JFC	joint force commander
JP	joint publication
JSTARS	Joint Surveillance and Target Attack Radar System
JTF	joint task force
JTTP	joint tactics, techniques, and procedures
KFE	Kunsan Focused Effort
LFA	lead federal agency
MOPP	mission-oriented protective posture
MTF	medical treatment facility
MW	megawatt
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NEO	noncombatant evacuation operation
NMS-CWMD	National Military Strategy to Combat Weapons of Mass Destruction
NORAD	North American Aerospace Defense Command
OCA	offensive counterair
OCONUS	outside the continental United States
OPR	office of primary responsibility
OSA	operational support airlift
PERSCO	Personnel Support for Contingency Operations
PPE	personal protective equipment
PSI	proliferation security initiative
Pu	plutonium
ROE	rules of engagement
SF	security forces
SOF	special operations forces
TIC	toxic industrial chemicals

TIM	toxic industrial materials
TMD	theater missile defense
TPFDD	time-phased force deployment data
TTP	Tactics, Techniques, and Procedures
UA	unmanned aircraft
UAS	unmanned aircraft systems
USEUCOM	United States European Command
USTRANSCOM	United States Transportation Command
WMD	weapons of mass destruction

Definitions

active defense. The employment of limited offensive action and counterattacks to deny a contested area or position to the enemy. (JP 1-02). [*Active defense operations attempt to intercept CBRN weapons en route to their targets.*] (AFDD 2-1.8) {Words in brackets apply only to the Air Force and are offered for clarity.}

Air Force Emergency Management Program. The single, integrated Air Force program to coordinate and organize efforts to manage, prepare for, respond to and recover from the direct and indirect consequences of CBRN and conventional weapon attacks, major accidents and natural disasters. The primary missions of the emergency management program are to save lives, minimize the loss or degradation of resources and continue, sustain, and restore combat and combat support operational capability in an "all hazards" physical threat environment at Air Force installations worldwide. The ancillary missions of the program are to support homeland security operations and to provide support to civil and host-nation authorities in accordance with DoD directives and through the appropriate combatant command. The program is managed by the Office of The Civil Engineer, AF/A7C. (AFDD 2-1.8)

air interdiction. Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required. (JP 1-02)

Airman. Any US Air Force member (officer or enlisted, active, reserve, or guard, along with Department of the Air Force civilians) who supports and defends the US Constitution and serves our country. Air Force Airmen are those people who formally belong to the US Air Force and employ or support some aspect of the US Air Force's air and space power capabilities. The term Airman is often used in a very narrow sense to mean pilot. An Airman is any person who understands and appreciates the full range of air and space power capabilities and can employ or support some aspect of air and space power capabilities. (AFDD 1-1)

airlift. Operations to transport and deliver forces and materiel through the air in support of strategic, operational, or tactical objectives. (AFDD 1)

area of responsibility. The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. Also called **AOR**. (JP 1-02)

battlespace. The environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes air, land, sea, space, and the included enemy and friendly forces; facilities; weather; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest. (JP 1-02)

biological agent. A microorganism that causes disease in personnel, plants, or animals or causes the deterioration of materiel. (JP 1-02).

chemical agent. Any toxic chemical intended for use in military operations. (JP 1-02) [*A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate personnel through its physiological effects. The term excludes riot control agents, herbicides, smoke, and flame.*] (AFDD 2-1.8) {Words in brackets apply only to the Air Force and are offered for clarity.}

coalition. An ad hoc arrangement between two or more nations for common action. (JP 1-02)

combatant command (command authority). Nontransferable command authority established by title 10 (“Armed Forces”), United States Code, section 164, exercised only by commanders of unified or specified combatant commands unless otherwise directed by the President or the Secretary of Defense. Combatant command (command authority) cannot be delegated and is the authority of a combatant commander to perform those functions of command over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. Combatant command (command authority) should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and the Service and/or functional component commanders. Combatant command (command authority) provides full authority to organize and employ commands and forces as the combatant commander considers necessary to accomplish assigned missions. Operational control is inherent in combatant command (command authority). Also called **COCOM**. (JP 1-02)

command and control. The exercise of authority and direction by a properly

designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. Also called **C2**. (JP 1-02)

consequence management. Actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents. Also called **CM.** (JP 1-02) [*CM activities serve to reduce the effects of a CBRN attack or event and assist in the restoration of essential operations and services at home and abroad in a permissive environment.*] (AFDD 2-1.8) {Words in brackets apply only to the Air Force and are offered for clarity.}

contamination. The deposit, absorption, or adsorption of radioactive material, or of biological or chemical agents on or by structures, areas, personnel, or objects. (JP 1-02)

contamination control. Procedures to avoid, remove, or render harmless (temporarily or permanently) nuclear, biological, and chemical contamination for the purpose of maintaining or enhancing the efficient conduct of military operations. (JP 1-02)

counterair. A mission that integrates offensive and defensive operations to attain and maintain a desired degree of air superiority. Counterair missions are designed to destroy or negate enemy aircraft and missiles, both before and after launch. (JP 1-02) [*Counterair integrates and exploits the mutually beneficial effects of offensive and defensive operations by fixed- and rotary-wing aircraft, surface-to-air and air-to-air missiles, antiaircraft guns, artillery, and electronic warfare to destroy or neutralize enemy aircraft and missile forces both before and after launch.*] (AFDD 2-1.1) {Words in brackets apply only to the Air Force and are offered for clarity.}

counter-chemical, biological, radiological, and nuclear. Activities taken to detect, deter, disrupt, deny, or destroy an adversary's CBRN capabilities and to minimize the effects of an enemy CBRN attack. Note: The interlinked components of C-CBRN operations are proliferation prevention, counterforce, active defense, passive defense, and consequence management. Also called **C-CBRN**. (AFDD 2-1.8)

counter-chemical, biological, radiological, and nuclear (C-CBRN) environment. A condition of warfare in which an adversary possesses or uses nuclear, radiological, biological and/or chemical weapons, by-products, infrastructure, and associated delivery methods. (AFDD 2-1.8)

counterforce. The employment of strategic air and missile forces in an effort to destroy, or render impotent, selected military capabilities of an enemy force under any of the circumstances by which hostilities may be initiated. (JP 1-02) [*Counterforce operations aim to detect, deter, deny, degrade, or destroy adversary CBRN capabilities including research and development, production, and storage facilities, fielded forces, and related C2.*] (AFDD 2-1.8) {Words in brackets apply only to the Air Force and are offered for clarity.}

counterland. Air and space operations against enemy land force capabilities to create effects that achieve joint force commander objectives. (AFDD 1)

counterproliferation. Those actions (e.g., detect and monitor, prepare to conduct counterproliferation operations, offensive operations, weapons of mass destruction, active defense, and passive defense) taken to defeat the threat and/or use of weapons of mass destruction against the United States, our military forces, friends, and allies. Also called **CP**. See also nonproliferation. (JP 1-02)

countersea. Operations conducted to attain and maintain a desired degree of maritime superiority by the destruction, disruption, delay, diversion, or other neutralization of threats in the maritime environment. The main objective of countersea operations is to secure and dominate the maritime environment and prevent the opponents from doing the same. (AFDD 2-1.4)

force protection. Actions taken to prevent or mitigate hostile actions against Department of Defense personnel (to include family members), resources, facilities, and critical information. These actions conserve the force's fighting potential so it can be applied at the decisive time and place and incorporate the coordinated and synchronized offensive and defensive measures to enable the effective employment of the joint force while degrading opportunities for the enemy. Force protection does not include actions to defeat the enemy or protect against accidents, weather, or disease. Also called **FP**. (JP 1-02)

functional component command. A command normally, but not necessarily, composed of forces of two or more military departments which may be established across the range of military operations to perform particular operational missions that may be of short duration or may extend over a period of time. (JP 1-02)

half-life. The time required for the activity of a given radioactive species to decrease to half of its initial value due to radioactive decay. The half-life is a characteristic property of each radioactive species and is independent of its amount or condition. The effective half-life of a given isotope is the time in which the quantity in the body will decrease to half as a result of both radioactive decay and biological elimination. (JP 1-02)

host nation. A nation which receives the forces and/or supplies of allied nations

and/or NATO organizations to be located on, to operate in, or to transit through its territory. (JP 1-02)

hostile environment. Operational environment in which hostile forces have control as well as the intent and capability to effectively oppose or react to the operations a unit intends to conduct. (JP 1-02)

individual protective equipment. In nuclear, biological, and chemical warfare, the personal clothing and equipment required to protect an individual from biological and chemical hazards and some nuclear effects. Also called **IPE**. (JP 1-02)

interdiction. An action to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used effectively against friendly forces. (JP 1-02)

joint force. A general term applied to a force composed of significant elements, assigned or attached, of two or more military departments, operating under a single joint force commander. (JP 1-02)

joint force air component commander. The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. The joint force air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called **JFACC**. (JP 1-02) [*The joint air and space component commander (JFACC) uses the joint air and space operations center to command and control the integrated air and space effort to meet the joint force commander's objectives. This title emphasizes the Air Force position that air power and space power together create effects that cannot be achieved through air or space power alone.*] [AFDD 2] {Words in brackets apply only to the Air Force and are offered for clarity.}

joint force commander. A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called **JFC**. (JP 1-02)

joint task force. A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a sub-unified commander, or an existing Joint Force Commander. Also called **JTF**. (JP 1-02)

noncombatant evacuation operation. Operations directed by the Department of State, the Department of Defense, or other appropriate authority whereby noncombatants are evacuated from foreign countries when their lives are

endangered by war, civil unrest, or natural disaster to safe havens or to the United States. Also called **NEO**. (JP 1-02)

nonproliferation. Those actions (e.g., diplomacy, arms control, multilateral agreements, threat reduction assistance, and export controls) taken to prevent the proliferation of weapons of mass destruction by dissuading or impeding access to, or distribution of, sensitive technologies, material, and expertise. Also called **NP**. See also counterproliferation. (JP 1-02)

nuclear weapon. A complete assembly (i.e., implosion type, gun type, or thermonuclear type), in its intended ultimate configuration which, upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy. (JP 1-02)

operational control. Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called **OPCON**. (JP 1-02)

passive defense. Measures taken to reduce the probability of and to minimize the effects of damage caused by hostile action without the intention of taking the initiative. (JP 1-02)

permissive environment. Operational environment in which host country military and law enforcement agencies have control as well as the intent and capability to assist operations that a unit intends to conduct. (JP 1-02)

personal protective equipment. Personal protective equipment is equipment designed to protect individuals exposed to hazards from injury or illness in non-military unique occupational environments where OSHA or applicable AFOSH standards apply, including emergency response to CBRNE incidents in the United States. Also called **PPE**. (AFDD 2-1.8) [HQ USAF/IL message, DTG

22153Z Dec 05— to be incorporated into AFI 10-2501]

proliferation prevention. To deny efforts by those seeking to acquire or expand their chemical, biological, radiological, or nuclear capabilities by: providing inspection, monitoring, verification, and enforcement support for nonproliferation treaties and arms control regimes; supporting export control activities; assisting in the identification of those attempting to acquire or expand these capabilities; and, if so directed by the proper authorities, planning and conducting denial operations. (AFDD 2-1.8)

radiological dispersal device. Any device, other than a nuclear explosive device, that disseminates radiation to cause damage or radiation injury. (AFDD 2-1.8)

support. 1. The action of a force that aids, protects, complements, or sustains another force in accordance with a directive requiring such action. 2. A unit that helps another unit in battle. 3. An element of a command that assists, protects, or supplies other forces in combat. (JP 1-02)

tactical control. Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. When forces are transferred between combatant commands, the command relationship the gaining commander will exercise (and the losing commander will relinquish) over these forces must be specified by the Secretary of Defense. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task. Also called **TACON**. (JP 1-02)

theater missile. A missile, which may be a ballistic missile, a cruise missile, or an air-to-surface missile (not including short-range, non-nuclear, direct fire missiles, bombs, or rockets such as Maverick or wire-guided missiles), whose target is within a given theater of operation. (JP 1-02)

toxic industrial chemicals. Any chemicals manufactured, used, transported, or stored by industrial, medical, or commercial processes. For example: pesticides, petrochemicals, fertilizers, corrosives, poisons, etc. TICs produce toxic impacts to personnel, materials, and infrastructure. Also called **TIC**.

toxic industrial materials. All toxic materials manufactured, stored, transported, or used in industrial or commercial processes. It includes toxic industrial chemicals, toxic industrial radiologicals, and toxic industrial biologicals. TIMs produce toxic impacts to personnel, materials, and infrastructure. Also called **TIM**.

uncertain environment. Operational environment in which host government forces, whether opposed to or receptive to operations that a unit intends to conduct, do not have totally effective control of the territory and population in the intended operational area. (JP 1-02)

unmanned aircraft. An aircraft or balloon that does not carry a human operator and is capable of flight under remote control or autonomous programming. A UA can be expendable or recoverable, can carry a lethal or non-lethal payload, is not operated for sport or hobby, and does not transport passengers or crew. Also called **UA**. (Modified from the OSD UAS Roadmap 2005-2030)

unmanned aircraft systems. Unmanned Aircraft System: That system, whose components include the necessary equipment, network, and personnel to control an unmanned aircraft Also called **UAS**. (Modified from the OSD UAS Roadmap 2005-2030)

weapons of mass destruction. Weapons that are capable of a high order of destruction and or being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high-yield explosives or nuclear, biological, chemical and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. Also called **WMD**. (JP 1-02) [*The Military Strategy to Combat Weapons of Mass Destruction (NMS-CWMD), 13 February 2006, deletes "high-yield explosives" from this definition and changes the verbiage "transporting or propelling the weapon" to "delivery of weapons."*]