Report on

Activities and Programs for Countering Proliferation and NBC Terrorism

Volume I – Executive Summary

May 2006

Interdiction

Elimination

Threat Reduction Cooperation

Passive Defense

Security Cooperation and Partner Activities

Offensive Operations

Active Defense

WMD Consequence Management

Counterproliferation Program Review Committee

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Submitted by USD(AT&L)

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FOREWORD

I am pleased to forward to the Congress the 2006 Counterproliferation Program Review Committee's (CPRC) *Report on Activities and Programs for Countering Proliferation and NBC Terrorism.* This report reflects the collective views of more than 20 organizations, including those within the Department of Defense (DoD), the Department of Energy (DOE), and the Intelligence Community (IC).

The 2005 CPRC major findings highlighted the need to improve chemical, biological, radiological, and nuclear (CBRN) sensors and detectors, to enhance the ability to detect adversaries' intentions and planned operations, and to enhance vaccines, pretreatments, and therapeutics. Additionally, missile defense and CBRN material control were identified as areas where development should be continued as planned. Notable progress in these areas includes the following:

Detection

- Close-in or point detection of unauthorized activities has been improved. DOE completed a multiagency test characterizing and validating advanced remote sensing instrumentation for nuclear and other WMD proliferation.
- The Defense Threat Reduction Agency (DTRA) developed radiological detection technologies and equipped and trained combatant commander operator teams.
- The Navy and DTRA jointly began efforts to rapidly field unmanned surface vessels for detection of waterborne radiological sources. The Coast Guard and the Department of Homeland Security are also partners in this effort.
- Biological and chemical detection improvements have been made with the prospect of increasing standoff distance.
- Advances in predictive models for adversarial intention are making progress.
- Standoff nuclear and other WMD detection remains the most elusive capability for now. It is addressed in a subsequent paragraph.

Vaccines, Pretreatments, and Therapeutics

- The Joint Vaccine Acquisition Program provided new contracts for vaccine production.
- Basic research in enteric disease and unconventional therapeutics is expanding.

Missile Defense

- The level of effort in this area has been sustained and progress is being made in increasing appropriate capabilities.
- Funding for missile defense has increased 20 percent. Key projects entered system development. An initial operational capability against long-range ballistic missiles was achieved.

Our analysis of resources indicates that basic research for combating WMD should be increased. It represents 7.6 percent of the science and technology accounts considered by the CPRC (Budget Activity (BA) 6.1 through BA 6.3). DoD-wide, BA 6.1 is approximately 13 percent. Given the high priority of combating WMD and WMD threat reduction, basic research for combating WMD should be significantly higher. Increases in BA 6.1 research should be focused on the *detect, identify,* and *characterize* technology functions with emphasis on WMD standoff detection.

Our CPRC process continues to improve as we reach out to the broad community of interest. This is a very important mission with many challenges and much work ahead.

Dale Klein
Executive Secretary
Counterproliferation Program Review Committee

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EXECUTIVE SUMMARY

The war on terror is a new kind of war against the most ruthless of enemies—and the fight we are waging is every bit as urgent as it is dangerous.... [These enemies] are looking to obtain chemical, biological, or even nuclear weapons by any means they can find, and would not hesitate to use such weapons at the first opportunity.

Vice President Richard B. Cheney
February 28, 2006
46th Annual American Legion Conference remarks
Washington, D.C.

INTRODUCTION

This *Report on Activities and Programs for Countering Proliferation and NBC Terrorism* is submitted to the United States Congress as required by the *1994 National Defense Authorization Act (NDAA) (as amended)*. The report provides the findings of the interagency Counterproliferation Program Review Committee (CPRC). The CPRC was chartered by Congress in 1994 to report on the activities and programs of the Department of Defense (DoD), Department of Energy (DOE), and the intelligence community (IC) that address improvements in the U.S. Government's efforts to combat weapons of mass destruction (WMD), their means of delivery, as well as terrorism involving these weapons.

This report is the principal executive branch report on research, development, and acquisition (RDA) programs to combat WMD. However, other interagency committees or department-specific groups also publish related but separate reports on nonproliferation, arms control, and combating terrorism programs.

The report comprises two volumes. Volume I is the unclassified executive summary. It provides an overview of the offices and principals that make up the CPRC and its Standing Committee; the linkage of CPRC efforts to national strategy and guidance; areas for capability enhancement; an assessment of progress in meeting combating WMD requirements; a presentation of the main efforts of DoD, DOE, and the IC in combating WMD; an overview of the Fiscal Year 2007 (FY07) funding for CPRC-monitored programs; CPRC recommendations for 2006; and finally, the principal conclusions and outlook for future CPRC challenges. A list of the abbreviations and acronyms that appear in the text is included at the end of the volume. The executive summary is available on line at *www.acq.osd.mil/cp*.

Volume II contains the main report and appendices. It is classified and provides an introduction on the purpose of this report, including a summary of national strategy perspectives to combat WMD; an overview of the threat from WMD; assessment highlights of CPRC programs and activities; recommendations; and appendices. The appendices provide information and source documentation on the CPRC itself, including its background, establishment, reporting requirements and participants; data on DoD, DOE, and IC programs and activities involved with combating WMD; Advanced Concept Technology Demonstrations (ACTDs) and Joint

Capability Technology Demonstrations (JCTDs); WMD consequence management (CM) and counterterrorism efforts; and 2006 combating WMD capability shortfalls.

CPRC ORGANIZATIONS AND STANDING COMMITTEE

DoD, DOE, and the IC form the CPRC, and contribute working-level representatives to it. In addition to the working level, a higher-level CPRC Standing Committee (SC) meets several times each year to address major issues identified during the CPRC review and report cycle. The SC, which was established in 1997 by agreement of the member organizations, is composed of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD(NCB)) (as chair); the Deputy Administrator for Defense Nuclear Nonproliferation, DOE (as vice chair); the Special Assistant to the Director of Central Intelligence (DCI) for Weapons Intelligence, Nonproliferation, and Arms Control (WINPAC); the Deputy Director for Force Structure, Resources, and Assessment, Joint Chiefs of Staff (J–8); and the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (ASD(SO/LIC)).

NATIONAL STRATEGY AND THE CPRC PROCESS

Participants in the CPRC process conduct their review of combating WMD activities and programs within the context of national strategy. The 2002 *National Strategy to Combat Weapons of Mass Destruction* defines three pillars: *strengthened nonproliferation to combat WMD proliferation, counterproliferation to combat WMD use,* and *consequence management to respond to WMD use.* This strategy places emphasis on missions to stop, neutralize, or defend against WMD before such weapons can be used against the United States, its friends, or allies across a full range of mission areas, as well as measures to mitigate the effects of an attack with WMD.

The first pillar of the National Strategy, *strengthened nonproliferation*, entails:

- Active nonproliferation diplomacy
- Multilateral regimes (arms control and other agreements)
- Nonproliferation and threat reduction cooperation
- Controls on nuclear materials
- U.S. export controls
- Nonproliferation sanctions (i.e., proliferation prevention).

The second pillar, *counterproliferation,* entails:

- Interdiction
- Deterrence
- Defense and mitigation (i.e., active defense, passive defense, and mitigation of crises).

And the third pillar, *consequence management,* entails actions to respond to and minimize the consequences of WMD against our:

- Citizens
- Military forces
- Friends and allies.

These three combating WMD pillars were reaffirmed in the March 2006 version of *The National Security Strategy of the United States of America*. This document outlined the requirements of a comprehensive strategy for countering the proliferation of WMD: (1) strengthened nonproliferation efforts, (2) proactive counterproliferation efforts, and (3) improved protection to mitigate the consequences of WMD use.

CPRC AREAS FOR CAPABILITY ENHANCEMENT

To effectively respond to its charter, the CPRC SC established Areas for Capability Enhancement (ACEs). The ACEs address all three pillars of the *National Strategy to Combat Weapons of Mass Destruction*—nonproliferation, counterproliferation, and consequence management. The ACEs serve as a means to categorize mission areas where progress is needed to enhance the combating WMD capabilities of the United States. The ACEs provide a framework for:

- Reviewing progress and assessing combating WMD requirements.
- Measuring RDA investment associated with combating WMD activities and programs.

The ACEs are aligned with the strategic mission areas described in the 2006 *National Military Strategy to Combat WMD* and DOE's Defense Strategic Goal, described in the 2004 *National Nuclear Security Administration Strategic Plan*. The ACEs also generally correspond to required capability areas across other federal government agencies that have combating WMD missions.

The combating WMD ACEs for 2006 are listed in Table 1. The ACEs are prioritized internal to each member organization (see DoD, DOE, and IC columns), and the CPRC SC determines the overall prioritization (see SC column). ACE priority should be regarded by decision-makers and resource managers as only one factor among many others to consider when building investments in combating WMD capabilities. However, it is important to maintain capabilities in all ACE areas in order to meet the U.S. Government's combating WMD objectives.

Table 1. 2006 ACEs and ACE Priorities of CPRC-Represented Organizations

ACE Priorities				Areas for Capability Enhancements
SC[a]	DoD	DOE	IC	
1	1	3	2	**Interdiction**. Operations to stop the transit of WMD, delivery systems, and associated technologies, materials, and expertise from transiting between states, and between state and nonstate actors of proliferation concern in any environment
2	2	4	1	**Elimination**. Operations[b] to systematically locate, characterize, secure, disable, or destroy a state or nonstate actor's WMD programs and related capabilities in hostile or uncertain environments
3	5	1	5	**Threat Reduction Cooperation**. Activities undertaken with the consent and cooperation of host-nation authorities to enhance physical security, and to reduce, dismantle, redirect, or improve protection of a state's existing WMD program, stockpiles, and capabilities
4	3	[c]	7	**Passive Defense**. Measures to minimize or negate the vulnerability and effects of WMD employed against U.S. and partner/allied armed forces, as well as U.S. military interests, installations, and critical infrastructure
5	7	2	3	**Security Cooperation and Partner Activities**. Activities to improve partner and allied capacity to combat WMD across the eight mission areas through military-to-military contact, burden-sharing agreements, combined military activities, and support to international activities
6	4	[c]	4	**Offensive Operations**. Kinetic (both conventional and nuclear) or nonkinetic operations to defeat, neutralize, or deter a WMD threat or subsequent use of WMD
7	6	[c]	6	**Active Defense**. Military measures to prevent, deter, or defeat the delivery of WMD. Measures include offensive and defensive, conventional or unconventional actions to detect, divert, and destroy an adversary's WMD or delivery means while en route to their target
8	8	5	8	**WMD Consequence Management**. Actions taken to mitigate the effects of a WMD attack or event and restore essential operations and services at home and abroad

[a] Integrated Standing Committee priorities based on input from five members: ATSD(NCB), DOE, Joint Staff, WINPAC, and ASD(SO/LIC).

[b] This description omits the word "military" from "military operations" found in the description from the *National Military Strategy to Combat WMD* in order to accommodate activities other than military.

[c] DOE did not rate the Passive Defense, Offensive Operations, or Active Defense ACEs.

SUMMARY ASSESSMENT OF PROGRESS IN MEETING COMBATING WMD GOALS

During this year's CPRC process, representatives of participating CPRC organizations formed ACE Assessment Groups (AGs) corresponding to the eight mission areas. The AGs analyzed the contribution of more than 200 programs in this report in the context of current national strategy guidance, and considered existing analytical products to make assessments of capabilities required to meet the goals of each ACE. The groups identified the main goals for each ACE, assessed the current status of programs and activities, identified high-priority shortfalls, and developed recommendations to address the goals of the ACE.

Table 2 provides a summary of ACE assessments and the recommendations to pursue for CPRC organizations to address the corresponding ACE goals. See the main report (Volume II) for additional details.

Table 2. ACE Assessment Summary

Goals	Ongoing Efforts	Shortfalls	Recommendations
Interdiction			
Develop and deploy capabilities to locate, tag, and track WMD and related materials and components Link information on trade or transfer of WMD Develop interdiction capabilities, including nonlethal means Improve special operations forces (SOF) interdiction capabilities Develop a comprehensive national nuclear detection architecture	Detection/sensors for high-priority threat materials Multilateral cooperative interdiction initiatives Render-safe technologies Intelligence and information management tools	Standoff detection	Leverage ongoing U.S. research in sensor technology to develop comprehensive nuclear material detection capabilities with a suite of sensors optimized for the interdiction mission Incorporate air interdiction exercises into the Proliferation Security Initiative (PSI) Improve maritime interdiction capabilities to include ports and harbors
Elimination			
Develop capabilities to locate, detect, identify, characterize, tag, and track WMD production and storage Develop WMD render-safe skills and capabilities, to include reachback Increase speed of response to elimination mission requirements Develop capabilities for joint command and control to address elimination mission requirements (Quadrennial Defense Review (QDR) capability requirement)	Training/exercise development SOF detection and location capabilities Agent defeat capabilities (i.e., render safe)	Wide-area and persistent long-range surveillance Lack of capabilities to destroy WMD Lack of capabilities and procedures to secure and exploit WMD sites	Improve capability to conduct exploitation of WMD sites, including characterization of local WMD, onsite analysis, and data exfiltration Develop capabilities to defeat, and destroy WMD at sites, or provide reliable, secure transportation and storage for further disposition of WMD-related materials
Threat Reduction Cooperation			
Enhance capabilities to improve safeguards, physical security, and materials protection, control, and accounting of chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) stockpiles Enhance capabilities to consolidate, reduce, or dismantle CBRNE Expand threat reduction activities to other high-threat regions by adapting existing or developing new cooperative frameworks	Multilateral safety and security initiatives Foreign proliferation prevention training and equipment	Need for improved capabilities to detect WMD materials in transit at border crossings Need for improved capabilities to detect and monitor dismantlement of WMD capabilities Need for increased emphasis on sustainability of threat reduction capabilities	Coordinate U.S. threat reduction cooperation efforts through a coordinating committee or group Improve development of more discriminating and sensitive sensors to monitor strategic transportation nodes
Passive Defense			
Sense chemical, biological, radiological, and nuclear (CBRN) hazards Shape the operating environment Shield the force Sustain operations	Reconnaissance, detection, and identification Battlespace management Individual/collective protection and medical countermeasures Decontamination and restoration	Lack of standardized test configuration and evaluation criteria for National Guard WMD Civil Support Teams (WMD-CSTs) Inadequate process to address WMD-CST science and technology (S&T) requirements Bio standoff detection Integrated early warning Lack of precision in hazard assessment tools	Utilize agile acquisition methods to field capabilities sooner while material developers work more stringent far-term goals Develop new test and evaluation methodologies to ensure adequate operational testing meets the needs of the capability documents and developmental programs Develop processes for standardizing installation protection and WMD-CST requirements

Table 2. ACE Assessment Summary (continued)

Goals	Ongoing Efforts	Shortfalls	Recommendations
Security Cooperation and Partner Activities			
Develop, implement, and support focused cooperative activities, particularly research and development (R&D) between the United States and our international partners, to improve their capabilities to combat WMD Provide technologies and systems to monitor and verify global regimes restricting the production, storage, and testing of WMD, WMD-related materials, and components	Multilateral arms control and nonproliferation treaties and agreements	Current monitoring regimes lack ability to handle advanced reprocessing technologies Need for improved wide-area, remote, and environmental monitoring capabilities Lack of efficient interagency data exchange	Continue efforts to integrate and coordinate U.S.-international partnering activities
Offensive Operations			
Implement end-to-end command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities directed at WMD and related infrastructure Employ offensive capabilities against in-transit, fixed, or WMD-related targets or infrastructure	C4ISR systems (e.g., detection, location, targeting) Strike capabilities (e.g., kinetic and nonkinetic)	Inadequate physical defeat	Provide full support to the ongoing U.S. Strategic Command-initiated capabilities-based assessment (CBA) scheduled for completion in summer of 2006 Improve physical defeat capabilities, with minimal collateral damage
Active Defense			
Continue to develop and field a single, integrated, layered Ballistic Missile Defense System (BMDS) to protect the United States, our deployed forces, and our allies and friends against ballistic missiles at all ranges and in all phases of flight Develop and field an integrated cruise missile defense capability and a UAV defense capability Enable U.S. forces to neutralize WMD threats worldwide—be they from national military programs, paramilitary organizations, or terrorists—by means of specially developed capabilities	BMDS	Challenges in countering ballistic missiles in boost phase and cruise missiles in all phases Technical challenges in detecting hidden explosives at standoff ranges up to 100 yards	Continue to fully fund the ballistic missile defense program
WMD Consequence Management (CM)			
Provide material solutions to enable joint commanders and others to respond, mitigate, and restore services in a post-engagement scenario characterized by damage and collateral hazard from CBRNE attack inside or outside the continental United States (CONUS) Develop processes and systems to ensure effective communication and coordination with domestic authorities	Advisory and augmentation assets (e.g., federal, state, local coordination) Equipment initiatives Forensic capabilities (e.g., attribution)	Lack of standoff detection-interoperability and quantity Lack of medical prophylaxis capabilities Limitation of current respiratory and ocular protective systems Lack of adequate coordinated CM data exchange and communications systems Deficiencies in several key medical response capabilities	Improve the level of interagency coordination and training through the establishment of coordinated data exchange systems (such as the Medical Situational Awareness In-Theater (MSAT) ACTD) and agreements on the use of interoperable communications systems Develop and expand joint-service and multiservice CM doctrine Establish a readiness and training reporting system for installation protection Conduct a comprehensive CM CBA within the Joint Capabilities Integration and Development System (JCIDS)

COMBATING WMD ACTIVITIES OF CPRC MEMBER ORGANIZATIONS

DoD, DOE, and the IC have separate responsibilities for combating WMD. DoD's activities span all three national strategy pillars and all eight combating WMD mission areas. DOE is concerned primarily with the nonproliferation pillar, in particular nuclear detection, proliferation prevention, and security of nuclear materials, which are the core of the Threat Reduction Cooperation, and Security Cooperation and Partner Activities ACEs. The IC supports both DoD and DOE, among other organizations, with activities across the mission areas. Tables 3, 4, and 5 highlight selected combating WMD activities for DoD, DOE, and the IC, respectively, which have occurred since the issuance of the 2005 CPRC report. The highlights presented in the tables meet three important criteria:

- Fulfilling specific ACE goals and performance measures.
- Meeting the requirements of corresponding policy guidance or international agreements.
- Reducing identified shortfalls or capability gaps within an ACE.

DoD Selected Activities To Meet Combating WMD Goals. DoD activities and programs cut across the spectrum of combating WMD. Figure 1 depicts DoD's approach to the proliferation threat environment and the combating WMD mission areas designed to prevail against it. DoD's primary focus is on providing warfighters with required capabilities to defeat, deter, defend, respond to, and recover from WMD and related threats or attacks. Key elements of DoD's approach include maintaining a strong deterrent capability; developing capabilities to identify, characterize, destroy, and interdict the production, transfer, storage, and weaponization of WMD; developing active defenses to interdict delivery means; developing passive defenses to provide detection, medical countermeasures, and individual and collective protection; training and equipping U.S. forces to operate effectively in a WMD-contaminated environment; and developing the ability to restore operations and manage the consequences of WMD use. In environments where international partners have agreed to cooperate to reduce the threat of WMD, DoD's contributions of expertise and technology for international military-to-military cooperation are crucial to the success of these nonproliferation missions. The key elements of these international cooperative efforts are supporting U.S. diplomacy, arms control, and export controls; and encouraging U.S. allies and coalition partners to make the three pillars of combating WMD a part of their military planning.

In February 2006, DoD released the most recent version of its *Quadrennial Defense Review (QDR) Report*. The QDR report outlined four main priority areas that frame the capabilities needed to address future challenges identified in the *National Defense Strategy*: (1) defeating terrorist networks, (2) defending the homeland in depth, (3) shaping the choices of countries at strategic crossroads, and (4) preventing hostile states and nonstate actors from acquiring or using WMD.

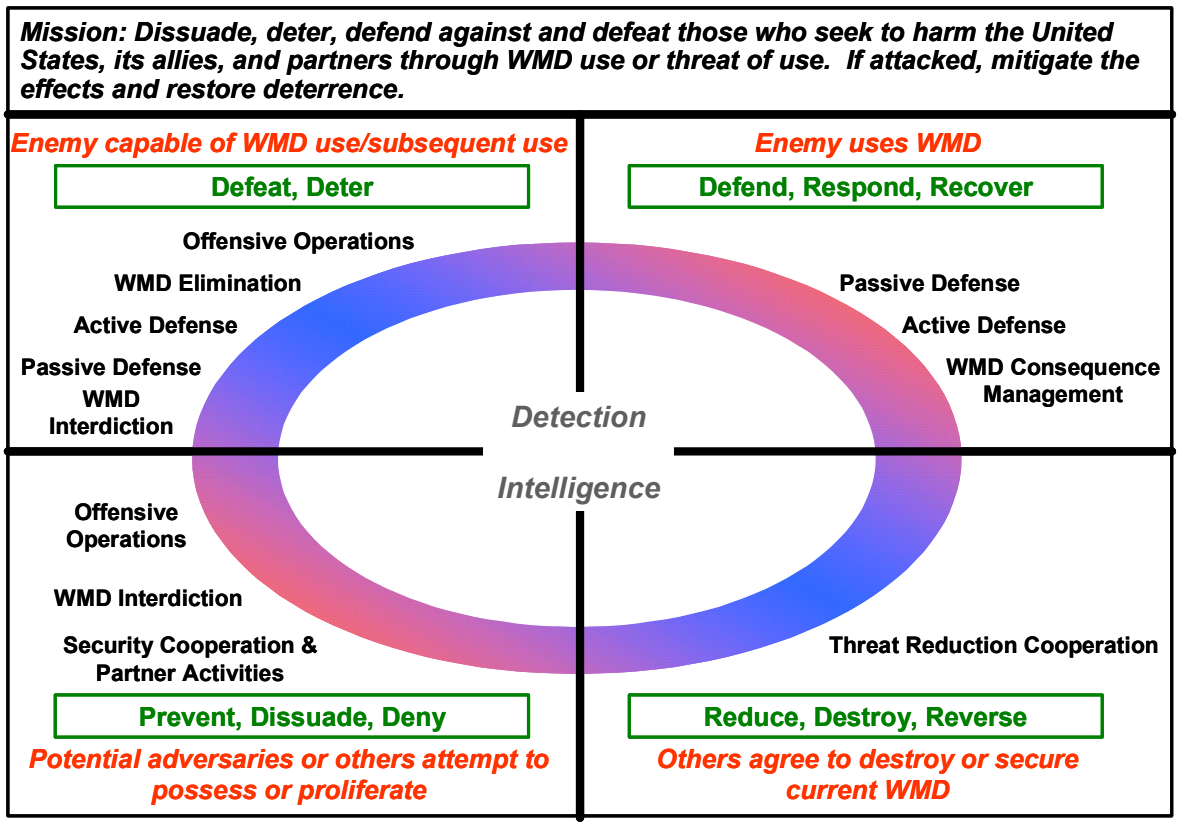

Figure 1. DoD's Approach to Combating WMD

The QDR report identified important capabilities needed by DoD for combating WMD. They are summarized below:[1]

- SOF forces to locate, characterize, and secure WMD.
- Systems to locate, tag, and track WMD and related materials (and transportation methods).
- Sensors to detect fissile materials at standoff ranges.
- Interdiction capabilities to stop all shipments of WMD, their delivery systems, and related materials.
- Persistent surveillance over wide areas to locate WMD capabilities or hostile forces.
- Human intelligence, language skills, and cultural awareness to better understand the intentions and motivations of potential adversaries and to speed recovery efforts.
- Capabilities and specialized teams to render WMD safe and secure.
- Nonlethal weapons to secure WMD sites.

[1] *Quadrennial Defense Review Report*, February 6, 2006, page 35.

- Capabilities to shield critical and vulnerable systems and technologies from the catastrophic effects of electromagnetic pulse (EMP).
- Joint command and control (C2) tailored for elimination.
- Capabilities to deploy, sustain, protect, support, and redeploy special operations forces (SOF) in hostile environments.

In addition, the QDR states that DoD should have planning constructs in place to allow for surge capacity to contribute to the Nation's response to and management of the consequences of WMD attacks or a catastrophic event, such as Hurricane Katrina.

Recent DoD activities addressing the QDR-identified required capabilities, as well as the combating WMD goals, are highlighted in Table 3.

Table 3. Highlights of DoD's Progress in Meeting Combating WMD Goals

Interdiction
Detection and tracking of illicit WMD will be improved by Defense Threat Reduction Agency (DTRA) and Navy research on unmanned surface vessels (USVs) that will alert personnel to the presence of undeclared radiological or special nuclear material on ships or barges from a USV
International cooperation efforts to stop the illicit flow of WMD and their means of delivery (WMD/M) were furthered through U.S. Navy-hosted multination PSI wargames to explore operational capability and interoperability issues; and through border control and export control training provided by DTRA to enhance maritime and border forces/capabilities in Ukraine, Azerbaijan, and Uzbekistan
Elimination
Joint C2 capabilities for elimination operations were enhanced when the U.S. Army Nuclear Employment Augmentation Team (NEAT) supported combatant commander (COCOM) exercises and Joint Targeting Boards; DTRA provided combating WMD planning teams to COCOMs to assist in developing and executing WMD elimination-focused tabletop exercises and planning sessions
Threat Reduction Cooperation
Safeguards at host-nation facilities were improved under the Biological Threat Reduction program, which completed construction of six Epidemiological Monitoring Stations in the Republic of Georgia and Uzbekistan; in addition, DTRA successfully transferred copies of especially dangerous pathogen collections from Georgia and Azerbaijan to the United States for further diagnostic analysis; WMD monitoring capabilities were furthered by the WMD Proliferation Prevention Initiative, which continued installation of radiation portal monitors and related support in Uzbekistan; our capability to reduce CBRN stockpiles was enhanced by the chemical weapons destruction program, which continued to build a chemical weapons destruction facility in Russia to destroy one-half of their stock of man-portable, nerve-agent-filled weapons; the Cooperative Threat Reduction program (CTR) eliminated 42 intercontinental ballistic missiles, 21 sea-launched ballistic missiles, 75 silos and missile launchers, 16 strategic bombers, 95 nuclear air-to-surface missiles, and 1 strategic submarine; CTR deactivated 337 nuclear warheads and helped transport another 300 for dismantlement or long-term storage
Passive Defense
Sense capabilities were furthered by the completion of construction and laboratory characterization of prototypes to demonstrate and compare competing passive and infrared (IR) spectrometry approaches to detect and discriminate biological and nonbiological agents for relatively low concentrations at useful standoff ranges. This provides the Joint Biological Standoff Detection System (JBSDS) with tested technology solutions to extend range, increase sensitivity, reduce false alarms, and allow daytime operation
Shape capabilities were furthered by the demonstration and transition of the Simulation, Training, and Analysis for Fixed Sites (STAFFS) model, which forms the technology base in the Joint Operation Effects Federation (JOEF) Phase I Prototype. Warfighters will use JOEF as a battlefield analysis tool to predict operational effects of CBRN weapons to support decision-making and training
Shield efforts were furthered by demonstration of the ability to produce materials employing self-detoxification chemistries for G-nerve, V-series nerve agents, and mustard agent in electrospun fibers
Sustain capabilities were improved by the U.S. Army Medical Command (USAMEDCOM) Health Facilities fielding of patient decontamination to 50 medical treatment facilities both inside and outside CONUS

Table 3. Highlights of DoD's Progress in Meeting Combating WMD Goals (continued)

Security Cooperation and Partner Activities
Increased participation in international combating WMD agreements was achieved when the States Parties discussed enhancement of capabilities for responding to cases of alleged use of biological weapons and strengthening disease surveillance under the Biological Weapons Convention
Capabilities to support the international agreements were enhanced by the completion of computer simulations of hyperspectral imaging
Offensive Operations
Our ability to locate, find, and target potential WMD and related targets was improved by the U.S. Army NEAT support to COCOM exercises and Joint Targeting Boards, and instruction at the Theater Nuclear Operations Course and Joint Flag Officer Warfighting Course
Our ability to locate, find, and target potential WMD and related targets was furthered by the Dynamic Tactical Targeting (DTT) program, which obtained live data from field operations and exercises
The ability to offensively strike WMD targets was furthered by the Hard and Deeply Buried Target Defeat Capability program, which completed development of a new weapon capability
Active Defense
To develop and operationalize global ballistic missile defenses, DoD completed the following activities:
Warfighters are conducting limited defensive operations of the Ballistic Missile Defense System; for the first time, we have a thin-line capability to defeat long-range missiles that threaten the U.S. homeland
The Missile Defense Agency (MDA) continued to deliver capabilities against short-, medium-, and long-range ballistic missiles; MDA increased the inventory of interceptors, expanded the sensor network, and enhanced command and control, battle management, and communications functionality
MDA resumed flight testing of its Ground-Based Interceptor with an interceptor characterization flight in Feb 06; MDA continued successful flight testing of Standard Missile-3 and Terminal High-Altitude Area Defense interceptors and conducted a number of useful ground and system tests
To develop a cruise missile defense capability, DoD achieved the following program key milestones:
Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM), a joint acquisition effort cruise missile defense system, completed the system/software requirements review and fire unit critical design review
Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) successfully completed Milestone B Army Systems Acquisition Review Council (ASARC) and Defense Acquisition Board (DAB) review, Jun 05; was approved for entry into the system development and demonstration (SDD) phase of the program life cycle, Aug 05; and issued contract change order for SDD
WMD Consequence Management
To improve CM response capabilities, the DTRA Research and Development Analysis Center (RDAT) institutionalized 24/7 subject matter expertise reachback and technology outreach services
To improve DoD coordination with other organizations at the federal, state, and local levels, the CBRNE Coordination Element provided support to JTF-CM (Exercise Ardent Sentry '05, Hurricane Rita), JTF-CS (Exercise Ardent Sentry '05, National Scout Jamboree/ National Security Special Event (NSSE) CM planning and C2 operations), and USEUCOM (Exercise Flexible Response '06/CM planning augmentation to HQ USEUCOM staffs)

DOE Selected Activities To Meet Combating WMD Goals. DOE's combating WMD-related activities and programs are directed toward providing capabilities in nonproliferation mission areas. Within DOE, the National Nuclear Security Administration's (NNSA) Office of Defense Nuclear Nonproliferation has the mission to provide policy and technical leadership to limit or prevent the spread of materials, technology, and expertise relating to WMD; advance the technologies to detect the proliferation of WMD worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.

Activities that address this nonproliferation mission include:

- Developing new technologies to improve U.S. capabilities to detect and monitor nuclear weapons production, proliferation, and prohibited nuclear explosions worldwide.
- Preventing and countering WMD proliferation by providing policy and technical support to implement and monitor transparent WMD reductions; strengthening indigenous international safeguards and export controls systems in other countries; transitioning WMD expertise and infrastructure to peaceful purposes; and improving international and multinational safeguards, export control, and interdiction regimes.
- Working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; and (2) install detection equipment at border crossings and megaports to prevent and detect the illicit transfer of nuclear material.
- Enabling the Russian Federation to permanently cease production of weapons-grade plutonium by replacing plutonium-producing nuclear reactors with fossil-fueled powerplants to provide alternative sources of heat and electricity and provide for the shutdown of the reactors.
- Eliminating surplus Russian plutonium and surplus U.S. plutonium and highly enriched uranium (HEU).
- Identifying, securing, removing, or facilitating the disposition of high-risk, vulnerable nuclear and radiological materials around the world that pose a potential threat to the United States and the international community.

DOE primarily supports the combating WMD missions of DoD and the IC through its nuclear proliferation prevention and counterterrorism activities. DOE also plays a critical role, through its core nuclear work, in addressing ACE priorities supporting inspection and monitoring activities of arms control agreements and regimes; protection of WMD and WMD-related materials and components; detection and tracking of these materials and components; and export control activities. In addition, DOE is working closely with DoD and the IC to detect, characterize, and defeat WMD and WMD-related facilities.

DOE activities in the combating WMD mission areas are highlighted in Table 4.

Table 4. Highlights of DOE's Progress in Meeting Combating WMD Goals*

Interdiction
NNSA has trained over 1,000 officials from licensing, scientific/technical, customs, and border guard organizations on WMD commodity recognition, nonproliferation principles, license review, and multilateral export controls
Elimination
DOE transitioned Sonoma, a state-of-the-art proliferation detection persistent surveillance airborne system, to DoD under the rapid-results initiative to support war-on-terrorism efforts
Threat Reduction Cooperation
To improve the physical security and accountability of nuclear material at foreign sites, DOE (1) completed rapid materials protection, control, and accounting (MPC&A) upgrades to all 19 Strategic Rocket Forces sites, signed all comprehensive upgrade contracts, and secured 150 buildings in Russia containing weapons-useable material or warheads; and (2) completed installation of radiation detection equipment to detect the illicit trafficking of nuclear and other radiological materials at 83 strategic transit/border crossings and sea transshipment hubs in Russia and other countries, and at four megaports
To reduce the quantity of HEU available globally, NNSA has downblended 80 metric tons of surplus U.S. HEU for peaceful use as nuclear reactor fuel
To bring under control many potential sources of "dirty bomb" radioactive material, (1) the U.S. Radiological Threat Reduction Program has recovered more than 11,000 sources since 1997 and (2) the International Radiological Threat Reduction Program has recovered approximately 1,500 sources from 16 sites in Russia, has completed physical security upgrades at 231 facilities containing vulnerable high-risk radioactive materials, and is in the process of finishing projects at an additional 211 locations in over 40 countries
Security Cooperation and Partner Activities
DOE delivered operational space-based nuclear explosion monitoring sensors to the Air Force on a schedule that supports Air Force launch timelines, thus sustaining the Nation's capability to monitor and report nuclear detonation that occurs on or above the Earth's surface
DOE provides updated calibration and geophysical models to improve the monitoring performance of regional seismic stations, thus improving the Nation's capability to monitor and report underground nuclear detonations in specific threat regions of the globe
DOE completed development and testing of the next generation of space-based optical explosion monitor, which was delivered to the Air Force in early FY06 and will be launched on a future Air Force satellite. This enhanced sensor has greater sensitivity and will improve the Nation's monitoring capability for very small surface explosions. All future nuclear explosion monitoring payloads will incorporate the enhanced optical sensor
As part of the HEU Transparency program, 30 metric tons of HEU is downblended annually. As of September 2005, the program has monitored the conversion of 255 metric tons of weapons-useable HEU. This represents the equivalent of 10,000 nuclear weapons permanently eliminated, in accordance with International Atomic Energy Agency-defined standards

*DOE did not highlight activities in the Passive Defense, Offensive Operations, Active Defense, or WMD Consequence Management ACEs.

IC Selected Activities To Meet Combating WMD Goals. The IC provides strategic, tactical, and operational intelligence on WMD threats to all U.S. Government organizations, a critical enabling function throughout all eight ACEs. Recently the IC's counterterrorism and counterproliferation efforts have been significantly restructured to correspond to new U.S. national security and homeland security guidance. Several new entities were established, including the National Counterterrorism Center, the National Counterproliferation Center (NCPC), and the position of Director of National Intelligence (DNI), to better manage, direct, and coordinate IC activities and interagency support in the areas of combating terrorism, counterproliferation, and homeland security. This restructuring is partly due to the recent Intelligence Capabilities Commission Regarding Weapons of Mass Destruction.

Intelligence Capabilities Commission Regarding Weapons of Mass Destruction. Upon receiving the report entitled *Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction*, the administration assigned responsibility for some 75 recommendations to respective departments and agencies and established working groups to address them. DoD participated in these working groups and in the development of the final recommendation to the President. Since this assessment process, DoD has continued to be

involved as some of the initial working groups transitioned to the next phase—development of implementation plans for the agreed-to recommendations.

Although the commission's report offered very good recommendations with respect to U.S. intelligence and WMD, almost all were associated with areas outside the purview or concern of the CPRC report to Congress. For example, many recommendations addressed the areas of information sharing, personnel, training, and analysis, or authorities outside DoD. Even in the instances where technology was mentioned in the report and recommendations, the context was more strategic (e.g., utilize more measurement and signatures intelligence (MASINT) in collection) or tied to the management and oversight of technology (e.g., the newly established DNI should appoint someone to oversee science and technology for the IC and develop S&T strategies) rather than to specific programs or funding recommendations.

Of note, however, is the fact that the report recommended (and the President implemented) the establishment of an NCPC to manage and coordinate IC activities related to nuclear, biological, and chemical weapons, as well as their delivery systems. Through this focal point, analysis, technology, and intelligence can be coordinated and integrated.

To respond to the recent emphasis in the national strategy to prevent WMD attacks as early as possible, the IC has placed high priority on the Elimination and Interdiction ACEs. The IC's recent activities toward achieving combating WMD goals are highlighted in Table 5.

Table 5. Highlights of IC's Progress in Meeting Combating WMD Goals

Interdiction
To improve capabilities to locate, tag, and track WMD, the IC identified and tracked WMD-related shipments (the National Geospatial-Intelligence Agency and others also helped)
IC support to various PSI activities helped to improve interdiction capabilities
As part of the effort to link information on trade and transfer of WMD, the IC produced a wide range of estimates and analytical projects, and continued work on databases to track and to link WMD proliferation
Elimination
As part of the effort to increase the speed of response to elimination mission requirements, the IC identified and characterized WMD and missile facilities, and supported coalition operations in Iraq
As part of linking information on the trade or transfer of WMD, the IC assisted the Department of State in providing actionable information to international inspections
Threat Reduction Cooperation
IC efforts in assessing safety and security of WMD and delivery systems helped to improve safeguards, physical security, MPC&A, and CBRN accountability
Passive Defense
To further *sense*, *shape*, *shield*, and *sustain* capabilities, the IC characterized traditional and nontraditional CW and BW agents
Security Cooperation and Partner Activities
IC inputs to diplomatic and other nonproliferation efforts (through WINPAC) enhanced U.S. focused cooperative activities
Offensive Operations
IC estimates and analytical products, including analysis of terrorists' potential CBRN capabilities, helped to improve end-to-end C4ISR capabilities directed at WMD and related infrastructure

Table 5. Highlights of IC's Progress in Meeting Combating WMD Goals (continued)

Active Defense
The IC provided early warning of imminent missile tests
The IC produced estimates and technical analysis of various missile systems
WMD Consequence Management
IC characterization of traditional and nontraditional CW and BW agents enhanced CM material solutions
IC provision of detailed consequence assessment analytical products significantly improved tool suites used by warfighters, planners, and homeland defense customers

FUNDING OF CPRC-MONITORED PROGRAMS

Combating WMD efforts build on the substantial investments made in the Armed Forces and defense infrastructure necessary for the security of the United States. The combined DoD-DOE President's budget request in combating WMD programs for FY07 is in excess of $16 billion compared with over $14.6 billion in FY06. All FY07 budget figures in this report are from the President's Budget. Additional information on combating WMD investment is presented in Volume II, Chapter 4.

The President's budget request from DoD for FY07 is over $14 billion. DoD allocates the bulk of its combating WMD investment in the areas of missile defense; detecting, identifying, characterizing, locating, predicting, and warning of traditional and nontraditional CW and BW agents; and supporting threat reduction cooperation efforts to reduce, dismantle, redirect, and secure global WMD stockpiles and capabilities.

DOE continues its investment in nonproliferation activities with over $1.8 billion requested for FY07 compared with the FY06 level of $1.74 billion. As part of its core national nonproliferation program, DOE focuses on protection, tracking, and control of nuclear weapon-related materials and components and export control activities; and supporting the inspection and monitoring of arms control agreements and other nonproliferation initiatives.

CPRC RECOMMENDATIONS

Combating WMD remains an established and institutionalized priority within each of the CPRC-represented organizations. These efforts reflect the Nation's firm commitment to stem the proliferation of WMD and WMD-related materials, and negate terrorist WMD threats. Moreover, as decision-makers, policymakers, and warfighters continue to reprioritize their nonproliferation, counterproliferation, consequence management, and WMD counterterrorism policy and strategy objectives, the CPRC will continue to review related DoD, DOE, and IC activities and interagency programs to ensure that they meet evolving needs and requirements.

The CPRC's recommendations for 2006 are summarized below.

The CPRC recommends that Congress reassess the scope of the formal CPRC coordination body and its annual report requirement as mandated *by the NDAA for Fiscal Year 1994 (as amended).* A number of organizational and national strategy changes have occurred since the CPRC was established in 1994 that impact the effectiveness of its reporting and coordination requirements. A reassessment of the purpose, composition, and requirements of the CPRC is warranted in view of these national level changes.

The CPRC recommends that Congress authorize the replacement of the Director of Central Intelligence (DCI) with the Director of National Intelligence (DNI) as the IC member. The responsibilities of national intelligence organizations have been affected by the establishment of the Office of the Director for National Intelligence, and it is more appropriate that DNI assume responsibility for CPRC-related intelligence matters.

The CPRC recommends that Congress support the President's FY07 budget request.

CPRC organizations will undertake additional efforts to improve our capability to combat WMD, highlighted below.

This report documents over 40 sensor development efforts across DoD, DOE, and the IC. Although improvements are being made in several capability areas, such as point and close-in detection of WMD materials, significant shortfalls remain in standoff detection of all WMD materials. Improved detection capabilities are needed in all three areas of the national strategy—counterproliferation, nonproliferation, and consequence management. To meet the threat of WMD proliferation and WMD terrorism, improvements are needed over the medium and long term. *The CPRC process should stress interdepartmental communication by sponsoring an interdepartmental working group to:*

- Identify and coordinate with relevant sensor development efforts across the U.S. Government (e.g., ensuring coordination with the Director of National Intelligence's Integrated Collection Architecture effort as well as efforts of other departments).
- Articulate technical goals and requirements needed to address current and emerging WMD threats.
- Identify technologies of sufficient maturity to warrant accelerated transition to initial deployment.
- Identify high-risk/high-payoff technologies that merit additional, supplemental investment.

Nuclear detection is an area that continues to require significant attention. There are limitations in detecting nuclear and radiological material at sufficient distances and in near-real time to detect proliferation, to warn personnel about the presence of radiological material, and to address many other missions. The Domestic Nuclear Defense Research and Development Working Group to the National Security Council/Homeland Security Council Domestic Nuclear Policy Coordinating Committee is developing R&D roadmaps in deficiency areas that could serve as the starting point to more comprehensive national nuclear detection capabilities.

Improved capabilities are needed to defeat and destroy nuclear, biological, and chemical weapons with minimum collateral damage. Options for securing, controlling, and destroying nuclear, chemical, and biological weapons or weapon-materials are limited. Technologies are not yet mature to destroy WMD agents from standoff ranges in nonpermissive environments with high precision and limited collateral damage, whether as part of interdiction, elimination, or offensive operations missions. Improved capabilities are needed to defeat and destroy nuclear, biological, and chemical weapons or related material, which are encountered in either nonpermissive or permissive environments, with minimal collateral effects.

Improved CBRN test and evaluation capabilities are needed to ensure that testing meets user requirements. Testing CBRN equipment under operational conditions requires improved test equipment (e.g., sensors, diagnostic equipment, etc.) to verify the adequacy of material solutions under development. Diagnostic sensors, for example, cannot detect to the level of decontamination that current capability documents are specifying, resulting in longer development times for decontaminants. Test and evaluation capability improvements are also needed to support two specific efforts—the National Guard Weapons of Mass Destruction Civil Support Teams (WMD-CSTs) and the Guardian Installation Protection Program.

CONCLUSIONS AND OUTLOOK

Improving integration and coordination for combating WMD remains an important goal for the U.S. Government and its various agencies and organizations. Leveraging the synergies among CPRC member organizations is crucial to enhancing and improving the diverse portfolio of combating WMD capabilities already possessed by the United States.

The CPRC member organizations continue to make strides in further developing and fielding the refined plans and advanced technologies required to counter the threat posed by WMD. Yet challenges remain, and it will take continued vigilance, resolve, and determination on the part of the United States, its friends, and its allies to protect against and respond to a future WMD attack on their Armed Forces or citizens.

There is a continuing need to expand dialog and information sharing among U.S. Government agencies and international entities to further prevent WMD proliferation. CPRC member agencies, other U.S. Government agencies, and interagency groups (e.g., the Nonproliferation and Arms Control Technology Working Group) are involved in strategic planning processes dealing with integrating aspects of combating WMD. The CPRC, through its member organizations, should engage and consult with these groups to identify processes that can be leveraged to improve interagency and international cooperation on RDA issues relevant to combating WMD.

ABBREVIATIONS AND ACRONYMS

ACE	Area for Capability Enhancement
ACTD	Advanced Capability Technology Demonstration
AG	Assessment Group
ASARC	Army Systems Acquisition Review Council
ASD(SO/LIC)	Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict
ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
BA	Budget Activity
BMDS	Ballistic Missile Defense System
BW	biological warfare
BWC	Biological Weapons Convention
C2	command and control
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CBA	capabilities-based assessment
CBRN	chemical, biological, radiological, and nuclear
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives
CM	consequence management
COCOM	combatant commander
CONUS	continental United States
CPRC	Counterproliferation Program Review Committee
CTR	Cooperative Threat Reduction
CW	chemical warfare
DAB	Defense Acquisition Board
DCI	Director of Central Intelligence
DNI	Director of National Intelligence
DoD	Department of Defense
DOE	Department of Energy
DTRA	Defense Threat Reduction Agency
DTT	Dynamic Tactical Targeting (program)
EMP	electromagnetic pulse
FY	fiscal year
HEU	highly enriched uranium
HQ	headquarters
IC	intelligence community
IR	infrared
JBSDS	Joint Biological Standoff Detection System
JCIDS	Joint Capabilities Integration and Development System
JCTD	Joint Capability Technology Demonstration
JLENS	Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor System
JOEF	Joint Operation Effects Federation
JTF-CM	Joint Task Force Consequence Management

JTF-CS	Joint Task Force Civil Support
MASINT	measurement and signatures intelligence
MDA	Missile Defense Agency
MPC&A	material protection, control, and accounting
MSAT	Medical Situational Awareness In-Theater (ACTD)
NBC	nuclear, biological, and chemical
NCPC	National Counterproliferation Center
NDAA	National Defense Authorization Act
NEAT	Nuclear Employment Augmentation Team (U.S. Army)
NNSA	National Nuclear Security Administration (DOE)
NSSE	National Security Special Event
PSI	Proliferation Security Initiative
QDR	Quadrennial Defense Review
R&D	research and development
RDA	research, development, and acquisition
RDAT	Research and Development Analysis Center (DTRA)
S&T	science and technology
SC	Standing Committee
SDD	system development and demonstration
SLAMRAAM	Surface-Launched Advanced Medium-Range Air-to-Air Missile
SOF	special operations forces
STAFFS	Simulation, Training, and Analysis for Fixed Sites (model)
USAMEDCOM	U.S. Army Medical Command
USEUCOM	U.S. European Command
USV	unmanned surface vessel
WINPAC	Weapons Intelligence, Nonproliferation, and Arms Control
WMD	weapons of mass destruction
WMD-CST	Weapons of Mass Destruction Civil Support Team
WMD/M	weapons of mass destruction and their means of delivery