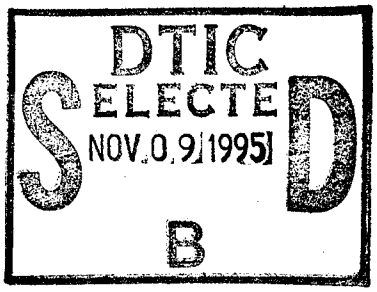
Report on Activities and Programs for Countering Proliferation

May 1995



Counterproliferation Program Review Committee

CPRC Report on Activities and Programs for Countering Proliferation

May 1995

TABLE OF CONTENTS

List of Tables and Figures

List of Tables and Figures (cont'd)

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1. Executive Summary

In the 1995 National Defense Authorization Act, Congress directed that a Counterproliferation Program Review Committee (CPRC) be established, chaired by the Secretary of Defense, and composed of the Secretary of Energy (as Vice Chairman), the Director of Central Intelligence (DCI), and the Chairman of the Joint Chiefs of Staff (JCS). The Committee was instructed to review activities related to countering proliferation within the represented agencies and, based on that review, make recommendations relative to modifications in such programs required to address shortfalls in existing and programmed capabilities. The CPRC was also tasked to assess progress of the represented agencies toward implementing the recommendations of its predecessor, the Nonproliferation Program Review Committee (NPRC), as summarized in its May 1994 Report to Congress. This report presents the findings and recommendations of the CPRC. The results are summarized below and provided in detail in the main body and appendices of the report.

The recommendations of the 1994 NPRC report constitute an integrated, top level plan to improve the overall capability of the United States in countering the proliferation of weapons of mass destruction (WMD). Although it will take a period of years to implement all of the NPRC recommendations, the represented organizations have taken a number of actions since the report was submitted. The CPRC can report that progress has been made over the past year in many areas leading toward a strengthening of U.S. capabilities for countering proliferation. This strengthening includes implementing initiatives that will lead to rapid fielding of essential capabilities and improved integration, management, and oversight of programs related to countering proliferation.

Accomplishments

Since the May 1994 NPRC report was submitted, the following initiatives have been undertaken to strengthen Department of Defense (DoD), U.S. Intelligence and Department of Energy (DOE) capabilities to counter the proliferation of WMD.

Planning, Coordination and Oversight of Programs for Countering Proliferation. The 1994 NPRC Report to Congress recommended the continuation of interagency efforts to coordinate programs related to countering proliferation. In addition, the report recommended establishing focal points within the Departments to oversee critical activities.

To implement these recommendations, several actions have already been undertaken. The CPRC, which was established by Congress for a period of two years, 1995 and 1996, will be continued by the DoD, U.S. Intelligence and DOE on a permanent basis to ensure ongoing top management coordination of the represented agency programs related to countering proliferation. In addition to internal coordination, programs are being coordinated with other government

agencies involved in the technical aspects of nonproliferation through the interagency Nonproliferation and Arms Control Technology Working Group.

As a result of the NPRC review, a DoD/DOE Memorandum of Understanding was signed establishing a joint DoD/DOE Senior Management Review Group to enhance and coordinate DoD and DOE activities related to countering proliferation. A focus of this review group is to define a long range DOE R&D program to support DoD's efforts in countering proliferation.

The Director of the DCI's Nonproliferation Center continues to serve as the focal point for U.S. Intelligence. Also, U.S. Intelligence has instituted and continues to implement a corporate strategic planning and evaluation process to serve as an integral part of the ongoing effort to establish a balanced intelligence effort to counter proliferation. This process supports and complements the DCI's new National Needs Process and the National Foreign Intelligence Program (NFIP), the Joint Military Intelligence Program (JMIP), and the Tactical Intelligence and Related Activities (TIARA) Program and Planning Guidance issued by the DCI and the Deputy Secretary of Defense.

The NFIP, TIARA and JMIP programs support the strategic and tactical intelligence counterproliferation functional area. NFIP provides strategic intelligence, detection and characterization of threats and general intelligence support for military force deployments. TIARA intelligence products include tactical surveillance and reconnaissance support to deployed military forces. JMIP is a new intelligence program designed to support military forces in a wide range of contingencies.

A new Central Intelligence Agency and DOE partnership effort for research and development in new technology areas to permit improved detection, characterization, and analysis of biological warfare (BW) and chemical warfare (CW) threats has shown positive results. This partnership takes advantage of the technical talent and expertise in the DOE laboratories -- talent and expertise applicable to work against BW and CW threats as well as those of nuclear threats.

Within the Office of the Secretary of Defense (OSD), a single point of contact for counterproliferation programs has been established. This responsibility has been assigned to the Assistant to the Secretary of Defense for Atomic Energy (ATSD(AE)), who also serves as the Executive Secretary for the CPRC.

The Chairman of the JCS has designated counterproliferation as one of nine Joint Warfighting Capabilities to be assessed. As part of the assessment process, a Missions and Functions Study was conducted by the Joint Staff, and the recommendations developed were approved by the Secretary of Defense on 5 May 1995. In addition, a close linkage has been established between the combatant Commanders-in-Chief (CINCs) and DoD's counterproliferation initiative, the Counterproliferation Support Program, through the Joint Staff to assure that the acquisition of capabilities (including those of the Counterproliferation Support Program) are responsive to evolving CINC priorities. Initiatives that have been implemented thus far and those that are proposed for FY 1996 have been developed in coordination with the Joint Staff, the Services, the CINCs and cognizant OSD components. The Joint Staff, in cooperation

with the CINCs, will continue its annual review of those areas that have been identified for enhanced investment (i.e., the 1994 NPRC "Areas for Progress") and establish priorities consistent with warfighter needs and requirements.

Overview of Enhanced Initiatives for Countering Proliferation. Following the issuance of the 1994 NPRC Report, DoD, DOE and U.S. Intelligence have implemented a series of initiatives to address many of the "Areas for Progress" identified in the 1994 report.

DoD established the Counterproliferation Support Program specifically to address the DoD shortfalls in operational capabilities identified by the NPRC. Congress provided the Counterproliferation Support Program with $60 million in FY 1995 to "jump start" the program, and $108 million has been requested by the Administration for FY 1996 to accelerate the development and deployment of essential military counterproliferation technologies and capabilities. In addition, $57 million has been budgeted to enhance ongoing cruise missile defense programs. These programs provide a vehicle to leverage counterproliferation investment as an overlay to a prior existing DoD-wide FY 1996 investment of approximately $3.8 billion in programs related to countering proliferation (of which $2.4 billion is Research, Development, Testing and Evaluation (RDT&E) funding to provide an active missile defense capability).

Significant progress is being made in meeting the interagency program objectives. For example, one of the areas of greatest concern to the NPRC was the lack of deployed capabilities to remotely detect and classify the presence of chemical and biological agents. U.S. Intelligence, DOE, and DoD initiatives are focused on improving detection capabilities to respond to these threats. DoD's Counterproliferation Support Program is providing enhanced funding to programs that will accelerate deployment of critical BW/CW agent remote detection and characterization systems by up to six years.

In another area of significant concern to the NPRC, the Counterproliferation Support Program is accelerating the development of a new generation of hard target defeat and collateral effects prediction and mitigation capabilities, and demonstrating them within the next two years (in a candidate Advanced Concept Technology Demonstration). The Counterproliferation Support Program is also accelerating important proliferation prevention efforts such as the initial fielding, in FY 1996, of enhanced capabilities to track nuclear, biological and chemical (NBC) related foreign shipments.

DOE is planning to establish enhanced programs in five areas. These include development and implementation of a program for Material Protection, Control and Accounting for the physical protection of Russian nuclear materials, expansion of the Department's support to the International Atomic Energy Agency (IAEA), strengthening of support to U.S. and international efforts aimed at minimizing the use of highly enriched uranium in international fuel cycle commerce, preventing a black market in nuclear materials, and providing additional intelligence products in support of U.S. Intelligence. The increases proposed in this area total $70 million in FY 1996 and build on a base of other DOE nonproliferation activities totaling $300 million in FY 1996.

U.S. Intelligence programs and initiatives are described in a classified Intelligence Annex to this report.

Findings

- In the past year, planning, coordination and oversight activities have been significantly expanded and now provide a range of vehicles to facilitate sound program management.

- Substantial progress has been made in addressing many of the high priority shortfalls identified in the 1994 NPRC Report. The CPRC has reviewed these programs as well as proposed program plans for FY 1996 and endorses the DoD, U.S. Intelligence and DOE organizational initiatives, programs and FY 1996 budgets, as described in this report. The CPRC urges Congress to support these initiatives and programs budgeted for FY 1996.

- Within the context of the NPRC-identified "Areas for Progress," the CPRC has identified shortfalls that require either new or additional emphasis. These areas of shortfall include improvements in missile defense, increased emphasis on DoD's capability to respond to in-country as well as overseas terrorist and paramilitary NBC threats, and the requirement to develop low collateral damage, non-nuclear "special weapons payloads." Technical and operational alternatives currently under study have been identified that address these shortfalls. Funding for Department and Agency alternatives will be evaluated within Department and Agency budgeting processes and evaluated against other pressing priorities.

In summary, the CPRC believes significant progress is being made in developing essential capabilities to counter the spread of NBC weapons, their infrastructure and associated delivery systems. The continuing efforts of the CPRC will focus on the identification and development of the most promising technologies for the detection and characterization of proliferation threats and for developing and providing capabilities to counter these threats. Congressional support for the FY 1996 budget submission for these Departments and Agencies is essential to ensure an aggressive program for countering proliferation.

2. Introduction and Overview

2.1 CPRC Report Requirements

Section 1605 of the Fiscal Year (FY) 1994 National Defense Authorization Act (NDAA) established the Nonproliferation Program Review Committee (NPRC) and directed the Department of Defense (DoD) to lead an interagency study of nonproliferation activities underway in Executive Branch agencies. The NPRC, chaired by the Deputy Secretary of Defense, issued its findings in a May 1994 Report to Congress entitled *Report on Nonproliferation and Counterproliferation Activities and Programs* (also known as the "Deutch Report" after the Deputy Secretary of Defense who chaired the NPRC at Secretary Perry's request). Congress modified the charter of the NPRC in Section 1502 of the FY 1995 NDAA and established a Counterproliferation Program Review Committee (CPRC) to replace the NPRC. Excerpts from the congressional language establishing the CPRC are contained in Appendix A of this report. Congress specified that the CPRC be chaired by the Secretary of Defense and composed of the Secretary of Energy (as Vice Chairman), the Director of Central Intelligence (DCI) and the Chairman of the Joint Chiefs of Staff (JCS). Consistent with the CPRC's charter, the Secretary of Defense has designated the Undersecretary of Defense for Acquisition and Technology (USD(A&T)) to perform the duties of the chairman of the CPRC. A listing of the CPRC study participants is provided in Appendix B.

Congress directed that the CPRC "identify and review existing and proposed capabilities and technologies for support of U.S. nonproliferation and counterproliferation policy." At the direction of Congress the CPRC is focusing its activities on those counterproliferation and nonproliferation programs underway and proposed by the DoD, the Department of Energy (DOE) and U.S. Intelligence (INTELL). The scope of the 1995 CPRC charter is, therefore, much narrower and more focused than that of the 1994 NPRC in that it covers only the activities of these three Executive Branch agencies. Nonproliferation programs of other Executive Branch agencies were not reviewed by the CPRC and are not discussed in this report.

Congress also directed that the Secretary of Defense submit to Congress, not later than May 1, 1995, a report of the findings of the CPRC. Congress specified that the report contain the following information: 1) a complete list, by specific program element, of the existing, planned, or newly proposed capabilities and technologies reviewed by the CPRC; 2) a complete description of the requirements and priorities established by the CPRC; 3) a comprehensive discussion of the near-term, mid-term, and long-term programmatic options formulated by the CPRC for meeting the CPRC's requirements and for eliminating identified deficiencies, including the annual funding requirements and completion dates established for each such option; 4) an explanation of the recommendations made by the CPRC, together with a full discussion of the actions taken to implement them; 5) a discussion and assessment of the status of each CPRC recommendation during the fiscal year preceding the fiscal year in which the report is submitted; 6) identification of each specific DOE program that the Secretary of Energy plans to develop to initial operating capability (IOC) and each such program that the Secretary does not plan to develop to IOC; and 7) for each new technology program scheduled to reach operational capability, a recommendation from the Chairman of the JCS that represents the views of the commanders of the unified and

specified commands regarding the utility and requirement of the program. This report is in response to this request.

2.2 Definitions and Objectives

2.2.1 Definitions. Proliferation refers to the spread of nuclear, biological, and chemical (NBC) weapons and the means to deliver them -- commonly referred to as weapons of mass destruction (WMD). In this report, the term "WMD" is meant to include NBC weapons, their supporting infrastructure elements, and their delivery systems, specifically cruise and ballistic missiles. The report focuses on existing and emerging proliferant states, but also considers the proliferation of WMD from China, the states of the Former Soviet Union (FSU), and Third World nations. DoD, DOE and U.S. Intelligence are responsible for a wide variety of tasks to prevent or counteract proliferation. DoD has specific responsibilities in warfighting and military operations. The DoD's specific responsibilities, referred to as counterproliferation, span the spectrum of military operations and include: support of proliferation prevention and intelligence activities, deterring the use of NBC weapons, defending against NBC weapons and their effects, and maintaining a robust ability to find and destroy NBC delivery forces and supporting infrastructure elements with minimum collateral effects, should this become necessary. The DOE's responsibility with regard to the proliferation of NBC weapons includes activities and programs in proliferation prevention, intelligence support, treaty verification, and technology research and development (R&D). The activities and programs of U.S. Intelligence summarized in this report address the broader intelligence efforts necessary to prevent, detect, and react to proliferation of WMD.

This report focuses on identifying those DoD, DOE and U.S. Intelligence activities and programs which support the "Non/Counterproliferation Areas for Progress" identified by the 1994 NPRC. These Areas for Progress also serve to delineate the recommended responsibilities of the DoD, DOE, and U.S. Intelligence. Table 2.1 lists these Areas for Progress along with the FY 1996 funding for the new DoD, DOE, and US. Intelligence initiatives established in response to the 1994 NPRC review.

The NPRC identified sixteen Areas for Progress. The NPRC judged that increased investment in fourteen of the sixteen areas would lead to the greatest progress in addressing the priority capability shortfalls also identified by the committee. The NPRC determined that each area represents an opportunity for significant improvement in operational capabilities with an acceptable level of technical risk and cost over time. Two of the sixteen areas, intercept capability in boost phase and prompt mobile target kill, were also expected to lead to great progress in addressing priority capability shortfalls but were judged by the NPRC to be adequately funded prior to the reduction of $50 million in the Boost Phase Intercept program for FY 1995. The NPRC included them to reinforce their importance. Two other areas, support for the Chemical Weapons and Biological Weapons Conventions and safe disposition of foreign missile and nonfissile material, are the responsibility of the Department of State (DOS) and the Arms Control and Disarmament Agency (ACDA), and, therefore, are not discussed further in this report. The recommended increases in investments were considered by the NPRC to be "order of magnitude"

Table 2.1:
New DoD, DOE and U.S. Intelligence Initiatives in Response to the Areas for Progress

1994 NPRC Report "Areas for Progress" **[Recommended Program Manager]**	**NPRC Estimated FY95 Invest. [$M]**	**NPRC Total Recomm. FY96 Increases [$M]**	**New DoD Initiatives for FY96 [$M]**	**New DOE Initiatives for FY96 [$M]**	**New INTELL Initiatives for FY96 [$M][b]**
A) Real-time detection and characterization of BW/CW agents including stand-off capability [DoD/INTELL]	110.0	75.0	23.6	-	
B) Underground structures detection and characterization [INTELL/DoD]	25.0	75.0	13.1	-	
C) Hard underground target defeat including advanced nonnuclear weapons (lethal or nonlethal) capable of holding counterforce targets at risk with low collateral effects [DoD]	35.0	40.0	49.9[a]	-	
D) Detection and tracking of shipments and control and accountability for stocks of WMD-related materials and personnel including worldwide WMD and dual-use item tracking [DOC/INTELL/DOE] [DoD]**	87.0	25.0	2.9	1.3 (DOE tech. base)	
E) Capability to detect, locate and render harmless WMD in the U.S. [DoD/DOE]	35.0	10.0	5.1	0.0	
F) Enhancement of collection and analysis of intelligence [INTELL] [DoD]**	Classified	25.0	1.9	-	
*G) Support Chemical Weapons Convention and Biological Weapons Convention [ACDA]	45.0	10.0			
H) Support conclusion of a verifiable Comprehensive Test Ban Treaty [ACDA/DOE]	50.0	10.0	-	0.0	
I) Capability to detect, locate and disarm, with high assurance and in a timely fashion, outside the U.S. WMD hidden by a hostile state or terrorist in a confined area [DoD]	3.0	15.0	(included in Area E)	-	
J) Passive defense capabilities enabling military operations to continue in contaminated conditions--actual or threatened (low cost, lightweight) [DoD]	5.0	15.0	11.7	-	
K) Rapid production of protective BW vaccines [DoD]	305.0	15.0	0.0	-	
L) Detection and interception of low flying/stealthy cruise missiles [DoD]	60.0	50.0	57.0	-	
M) Transparency and control of foreign fissile material [DOE]	12.0	15.0	-	70.0[c]	
*N) Safe disposition for foreign missile- and WMD-related materials (except fissile material) [DOS]	1.5	20.0			
O) Intercept capability in boost phase [DoD] [d]		Adequately Funded	-	-	
P) Prompt mobile target kill [DoD]		Adequately Funded	-	-	
• Totals:	**773.5+**	**400.0**	**165.2**	**71.3**	-[b]

* These areas are not the responsibility of the DoD, DOE, or U.S. Intelligence and are, therefore, not discussed in this report.

** The NPRC did not include DoD responsibilities in this area. The CPRC has corrected this oversight and included these responsibilities as described in the body of the report.

a - While other entries in this column represent incremental increases over existing programs, in this area ongoing work was moved under the Counterproliferation Support Program at the direction of the Deputy Secretary of Defense. This entry shows the total of the incremental increases and ongoing work in this area ($31.4M + $18.5M, respectively)

b - See Intelligence Annex.

c - DOE's Material Protection, Control, and Accountability Initiative responds to Area D also.

d - Table does not include ongoing active defense programs and efforts conducted by the DoD. The "adequately funded" determination was made prior to the $50M reduction in FY95.

estimates only, since this was the first attempt to address this important subject in an integrated manner. By "Program Manager" the NPRC meant the agency recommended for being responsible for oversight and coordination of all U.S. Government activities for a given Area for Progress.

A Multi-Tiered Response to Countering WMD. Considering the complexities of facing an adversary armed with WMD, the CPRC places a high priority on proliferation prevention activities. Realizing, however, that efforts to halt the proliferation of NBC weapons and their means of delivery have not been entirely successful, DoD must prepare U.S. armed forces to fight, survive and prevail in any conflict involving the use of NBC weapons by an adversary.

The represented agencies have developed a multi-tiered response to counter WMD threats that seeks to devalue their perceived utility and, consequently, to make their acquisition unattractive to a would-be proliferant, while at the same time assuring that U.S. forces can prevail in a Major Regional Conflict (MRC) involving an adversary's use of WMD. These underpinnings of deterrence are achieved by aggressively pursuing capability improvements in the following seven key functional areas, illustrated in Figure 2.1 and defined below:

- ***Proliferation Prevention*** -- to deny attempts by would-be proliferants to acquire or expand their WMD capabilities by: providing inspection, verification and enforcement support for nonproliferation treaties and WMD control regimes; supporting export control activities; assisting in the identification of potential proliferants before they can acquire or expand their WMD capabilities; and, if so directed by the National Command Authority (NCA), planning and conducting interdiction missions;

- ***Strategic and Tactical Intelligence*** -- to provide to policy and operational organizations actionable foreign intelligence on the identity and characterization of activities of existing or emerging proliferant states and groups, in order to support U.S. efforts to prevent acquisition of weapons and technology, cap or roll back existing programs, deter weapons use, and adapt military forces and emergency assets to respond to threats;

- ***Battlefield Surveillance*** -- to detect, identify and characterize WMD forces and associated elements (using DoD and intelligence assets) in a timely manner to support combat operations such as targeting and mission/strike planning activities and provide timely post-attack and battle damage assessment (BDA);

- ***Counterforce*** -- to target (using battlefield surveillance and other intelligence assets), plan attacks, deny, interdict or destroy, and rapidly plan restrikes as necessary against hostile NBC forces and their supporting infrastructure elements while minimizing collateral effects;

- ***Active Defense*** -- to protect U.S., allied and coalition forces and noncombatants by intercepting and destroying or neutralizing WMD warheads delivered by ballistic and cruise missiles, while minimizing collateral effects that might arise during all phases of intercept;

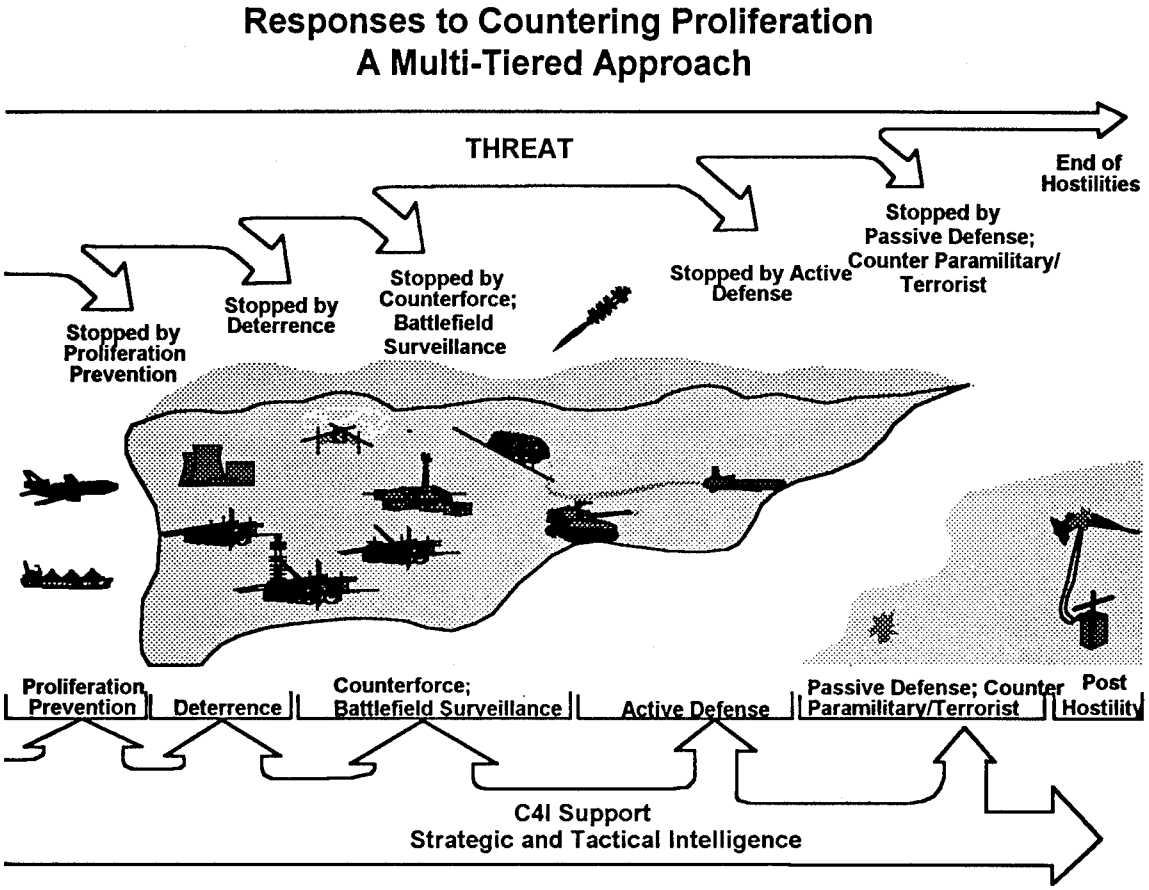

Figure 2.1. Countering Proliferation: A Multi-Tiered Approach

- ***Passive Defense*** -- to protect U.S., allied and coalition forces and noncombatants against NBC effects associated with WMD use, including: measures to detect and identify NBC agents, individual and collective protection equipment for combat use, NBC medical response, and NBC decontamination technologies; and
- ***Countering Paramilitary/Covert and Terrorist WMD Threats*** -- to protect military and civilian personnel, facilities, and logistical/mobilization nodes from this special class of WMD threats both in the United States and overseas.

The program descriptions provided in Section 5 will be grouped into these seven functional areas related to countering proliferation.

2.2.2 Scope of Programs Considered by the CPRC. In this report two types of programs and activities are described: 1) new DoD, DOE, and U.S. Intelligence initiatives established and implemented in direct response to the 1994 NPRC recommendations; and 2) programs strongly related to countering proliferation which include activities and programs that were in existence prior to the 1994 NPRC review, but which are directly related to the NPRC Areas for Progress. The CPRC defined programs strongly related to countering proliferation as

those programs which, if eliminated, would necessitate significant modification of the new initiatives to achieve the recommended improvements in capabilities outlined in the NPRC report.

Existing and ongoing DoD programs strongly related to countering proliferation include, for example: programs in NBC passive defense; counterforce against WMD targets; counter-paramilitary/covert and terrorist programs specifically related to countering NBC threats; theater ballistic missile and cruise missile defense research, development, testing and evaluation (RDT&E) (particularly collateral effects mitigation); and RDT&E activities in mobile missile precision strike. The CPRC expanded the scope of programs strongly related to counterproliferation to include all Theater Missile Defense (TMD) programs, whereas the NPRC only emphasized boost phase intercept. (It should be noted that general purpose and defense infrastructure programs, such as development and procurement programs for the various military weapon delivery platforms, are not included because they contribute to the basic capabilities of U.S. forces which underlay all military capabilities, not just countering proliferation.) DOE and U.S. Intelligence programs which are directly related to the NPRC Areas for Progress are also considered to be strongly related to countering proliferation.

In general, the new initiatives leverage and augment existing and ongoing programs in order to accelerate program deliverables. DoD's Counterproliferation Support Program is one example of a new initiative designed to accelerate the RDT&E and fielding of several ongoing DoD programs and program deliverables. For example, one of the areas of most concern to the NPRC was the lack of deployed capabilities to detect and classify the presence of biological and chemical weapons (BW/CW) agents on the battlefield. In this case, the Counterproliferation Support Program is providing enhanced funding to ongoing programs that will accelerate deployment of critical detection and characterization systems by up to six years. In another area of significant concern to the NPRC, the Counterproliferation Support Program is supporting the accelerated development of a new generation of hard target defeat and collateral effects prediction and mitigation capabilities that will be demonstrated within the next two years as part of the candidate Counterproliferation Advanced Concept Technology Demonstration (ACTD).

2.2.3 Operational Objectives. To meet mission objectives for countering proliferation and ensure that related RDT&E activities lead to acquisition programs and deployed capabilities that satisfy the requirements of the combatant commanders, operational objectives have been identified by the CPRC and are listed in Table 2.2 for each functional area. New initiatives have been established to meet these operational objectives in a timely manner by accelerating the fielding of technologies and systems satisfying the operational requirements of the combatant commanders and other customers.

2.3 Proliferation Threat Overview

U.S. national security requirements have undergone fundamental changes in just a few short years. As the Soviet threat that dominated U.S. strategy, doctrine, weapons acquisition, and force structure for so long has diminished, the emerging threat to U.S. national security from

Table 2.2: Countering Proliferation Operational Objectives

Counterproliferation Functional Area	Objectives
• Proliferation Prevention	• Effective and Cooperative Interagency Support in Export Controls, Treaty Verification and Inspection Support • Detection and Tracking of Shipments/Diversions of WMD Materials and Technologies • Effective and Timely Data Correlation and Fusion
• Strategic and Tactical Intelligence	• Provide Accurate, Comprehensive, Timely, and Actionable Foreign Intelligence in Support of National Strategy for Countering Proliferation • Effective/Timely Dissemination of Operational Intelligence
• Battlefield Surveillance	• Accurate WMD Target Identification and Characterization • Time Urgent Response • Prompt, Reliable Post-Attack Damage Assessment and BDA
• Counterforce	• Time Urgent Response • Timely Targeting and Strike Planning • High Kill/Neutralization Probability against WMD Targets • Collateral Effects Minimization/Neutralization
• Active Defense	• Cost-Effective, Wide Area, Low Leakage WMD Active Defenses • Collateral Effects Minimization/Neutralization
• Passive Defense	• Prompt, Standoff and Accurate NBC Agent Detection and Identification • Individual and Collective Protection and Decontamination that Minimize Casualties and Operational and Logistical Impacts • Availability of Effective BW Vaccines
• Countering Paramilitary/Covert and Terrorist WMD Threats	• Joint DoD Readiness against WMD Threats in the U.S. and Overseas • Prompt, Effective World-Wide Response

WMD proliferation has become a key concern. Nuclear weapons proliferation has long been, and remains today, a major national security concern. However, recent events indicate that biological and chemical weapons proliferation is also cause for growing concern. At least twenty countries -- some of them hostile to the United States, its allies and friends -- now possess or are seeking to develop or acquire WMD and their means of delivery. More than twelve countries already have WMD-capable ballistic missiles in operation; still more countries are trying to develop them. Figure 2.2 illustrates the extent of the global WMD threat. Some of these countries are clearly willing to use WMD, and some have. CW and/or BW are believed to have been used in recent conflicts in Afghanistan, Vietnam, Laos, Cambodia, and in the Iran-Iraq war. Most recently, as the Tokyo subway incident shows, terrorist attacks using CW have suddenly become a reality.

Still another development exacerbating today's proliferation problem is a by-product of growth in world trade and the rising tide of technology everywhere. The world economy is characterized by ever increasing technology diffusion making it harder to detect illicit diversions of WMD materials and technology. This serves to increase the warfighting CINCs' need for timely and adequate intelligence to determine if any potential weaponization has occurred.

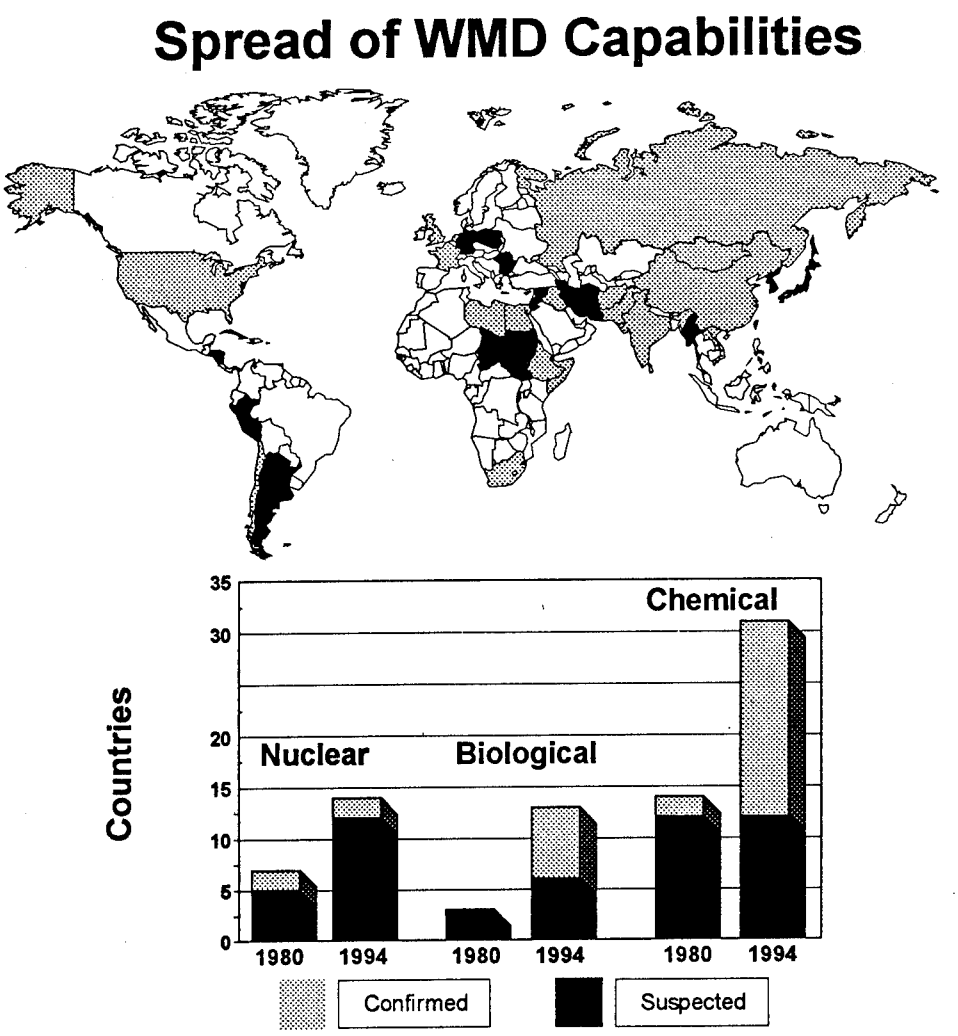

Figure 2.2: The Growing Worldwide WMD Threat

DoD's WMD proliferation concerns are threefold: 1) the potential for the diffusion of advanced military technology, WMD know-how and WMD-related materials from states of the FSU; 2) the proliferation of WMD capability through experts from existing proliferant states; and 3) the development of indigenous WMD capabilities.

The potential of an adversary to use WMD against U.S. forces in a theater of action will increase the demands on the warfighting CINCs to defend against and respond to the full spectrum of possible WMD usage. The threat of WMD includes their possible use in an MRC at the higher end of the conflict spectrum to paramilitary and terrorist activities at the low end of the CINCs' responsibility. Although the magnitude of destructive effects resulting from use of WMD on the battlefield may be significantly reduced compared to that anticipated in Cold War scenarios, the likelihood of use may be significantly increased in an MRC. U.S. combatant commanders require capabilities to: deter the use of WMD; detect their locations; destroy them before they can be used against U.S., allied, and coalition forces and civilians; defend against,

fight, and prevail through their employment; and decontaminate subsequent to use. WMD can directly threaten U.S. forces in the field and, perhaps in a more perplexing way, also threaten the effective employment of these forces by causing undesired dispersal. In contrast to the Cold War, it is the U.S. that now has unmatched conventional military power, and it is its potential adversaries who may use WMD to deter U.S. power projection abroad.

A classified Intelligence Annex to this report outlines today's assessment by U.S. Intelligence of the growing WMD threat in more specific detail.

2.4 Organization of the Report

The remainder of the report is organized as follows. Section 3 provides a review of U.S. Government policy with regard to countering the proliferation of WMD, along with an overview of the findings of the 1994 NPRC review which include the NPRC-identified highest priority shortfalls in operational capability. Section 4 introduces the new DoD, DOE, and U.S. Intelligence initiatives developed in response to the 1994 NPRC findings (Sections 4.1 - 4.3, respectively) and provides a summary of their integrated responses to the NPRC-identified shortfalls (Section 4.4). (It should be noted that the details of U.S. Intelligence activities are provided in a separately bound Intelligence Annex to this report.) Section 4 also contains a discussion of the CINCs' prioritization of counterproliferation capabilities performed subsequent to the NPRC report (Section 4.5). Section 5 provides detailed program descriptions of both the new initiatives and those DoD, DOE, and U.S. Intelligence programs in existence prior to the 1994 NPRC review which are related to the NPRC Areas for Progress (Sections 5.1 - 5.3, respectively). Specifics on how the new initiatives and prior existing programs address the NPRC-identified shortfalls are also discussed with remaining shortfalls highlighted. A summary of how these programs impact the Areas for Progress in the near-, mid-, and long-term time frames is also provided (Section 5.4), which also serves as a summary of remaining shortfalls. Section 6 describes DoD programmatic options proposed by the CPRC for implementation in FY 1997 to address remaining capability shortfalls. The CPRC's recommendations for continued progress in addressing the WMD proliferation threat are provided in Section 7.

Five appendices are also included in the report: Appendix A provides excerpts of the congressional language chartering the CPRC and this report; Appendix B lists the CPRC study participants; Appendix C provides a summary of DoD programs related to counterproliferation, including budget profiles for FY 1996; Appendix D provides DOE's budget profile for programs strongly related to countering proliferation; and an acronym list is provided in Appendix E. Finally, a separately bound Intelligence Annex has been prepared to describe U.S. Intelligence programs related to countering proliferation.

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3. Review of Policy and the 1994 NPRC Priorities

President Clinton's September 1993 policy statement to the United Nations General Assembly on nonproliferation and export controls established the groundwork for a new consensus among the Executive and Legislative Branches, industry and public, and our allies abroad for overall proliferation policy. While continuing its strong support for existing nonproliferation norms and agreements, the U.S. is putting increased emphasis on developing effective multilateral approaches to reduce incentives and motivations for proliferation. Nonproliferation is an integral part of national security strategy and is crucial to U.S. national security.

Several broad policy considerations are shaping the U.S. approach to the proliferation problem:

- Nonproliferation through diplomacy remains the paramount objective of U.S. policy.
- Initiatives and capabilities to counter proliferation have a high priority on the U.S. national security agenda.
- The U.S. will implement domestic export controls that recognize both our nonproliferation objectives and the commercial needs of U.S. exporters.
- The U.S. cannot rely on technology denial alone.
- The U.S. will devote special attention to regions and countries where the dangers of proliferation are particularly acute.
- The U.S. will lead global efforts to reduce reliance on missiles and WMD.
- U.S. forces should possess a spectrum of capabilities to execute the requirements of U.S. policy to counter proliferation.

DoD Policy Overview. DoD policy to counter proliferation underlies strengthened efforts to prevent proliferation and to protect U.S. forces, interests and allies in the face of proliferation where it occurs. It applies to the development of requisite U.S. military capabilities and requires U.S. forces to be prepared to execute offensive and defensive military operations to counter the deployment and employment of WMD. The major objectives of DoD policy are: 1) support overall U.S. Government efforts to prevent the acquisition of WMD and missile capabilities; 2) support overall U.S. Government efforts to roll back proliferation where it has occurred; 3) deter the use of WMD and their delivery systems; and 4) adapt U.S. military forces and planning to operate against the threats posed by WMD and their delivery systems. To achieve these policy objectives, U.S. forces should possess a spectrum of capabilities. These capabilities and the programs underway and newly established to bring them to fruition are discussed in the sections that follow.

Shortfalls in Capabilities Related to Countering Proliferation. The May 1994 NPRC Report identified a set of initial high priority shortfalls in operational capability, noting that the full process of defining operational requirements, evaluating current capabilities, identifying all important shortfalls, and preparing programs to address these shortfalls had yet to be completed. These shortfalls were identified under the assumption that ongoing U.S. activities and programs related to countering proliferation would be fully funded. Table 3.1 lists these shortfalls. In Sections 4 and 5, the new initiatives established by the DoD, DOE and U.S. Intelligence in response to the NPRC Areas for Progress and the ongoing and existing programs on which they build that are strongly related to countering proliferation are described and evaluated in terms of the NPRC-identified shortfalls listed in Table 3.1. Shortfalls identified by the CPRC that remain to be addressed are highlighted and summarized in Section 5.

Table 3.1: 1994 NPRC Highest Priority Shortfalls in Operational Capability

• **Proliferation Prevention: Inspection Support** - Capability to monitor and detect suspect activities using cooperative and noncooperative means - Safe destruction of treaty limited items - Facility inspection for material detection, analysis and transport/safeguard - Remote monitoring capability
• **Proliferation Prevention: Support for Export Control** - Automated capability to identify proliferation paths and activities - Country-specific data to include technical paths for WMD development and supply relationships - Capability to fuse multisource data - Identification and tracking of critical materials and items
• **Strategic and Tactical Intelligence** - Reliable methodology for detecting WMD programs early in their development including motivations, plans, and intentions of policy makers - Effective methods to understand and counter diverse concealment, denial, and deception practices--particularly the identification and characterization of underground facilities and dual use facilities - Non-optimal exploitation of collected information because of lack of intelligence community connectivity and effective processing and analytical tools - Ability to locate and identify NBC weapons activities - Identification and characterization of technology transfer networks supporting the development of WMD - Intelligence preparation of the battlefield: characterization of WMD forces and infrastructure, identification and targeting of WMD and their missile delivery systems, BDA, and fusion of WMD related sensor/signature data - Real-time intelligence to the warfighter including sensor-to-shooter linkage in operational command-control
• **Battlefield Surveillance** - Wide area and continuous coverage with flexible focus - Non/counterproliferation unique targeting support - Automation of target detection and sorting - Sensor-to-shooter linkage in operational command-control - Real-time NBC agent detection and identification - Advanced battle damage assessment capability - Survivability of tactical information assets in a WMD environment

- **Counterforce**
  - Prompt target kill: real-time intelligence and targeting information to warfighters and pre-launch engagement of mobile missiles
  - Affordable standoff attack
  - Capability to provide air and sea lift under threat of WMD-bearing delivery systems
  - Successful attack of very hard underground targets: fine-grained intelligence to support target identification and characterization, warhead lethality against such threats, weapon fuze capability, nonlethal disabling and isolation techniques, and suppression of enemy C3I
  - Limitation of collateral damage: hazardous material dispersal and safe chemical/biological agent defeat
  - Target planning and protection capability: WMD proliferation path assessment, collateral effects prediction, weapon effects, target characterization, real-time accurate BDA, and deployable C3I
  - Support of Special Operations Forces: man-portable kill/disabling capability and WMD detection systems

- **Active Defense**
  - Safe kill of WMD targets
  - Assured warhead lethality against WMD threats
  - Capability to counter likely ballistic missile countermeasures
  - Detection and intercept of stealthy/covert systems
  - Intercept capability in boost phase
  - Assured rapid access to regions in crisis or conflict
  - Protection of military and civilian targets
  - Wide area/regional defenses

- **Passive Defense**
  - Standoff detection and discrimination of BW/CW agents and nuclear radiation
  - Passive defense capabilities enabling military operations to continue in contaminated conditions--actual or threatened (low cost, lightweight): individual/collective protection for personnel and equipment, vaccines and antibiotics for protection/mitigation of effects, advanced hazard dispersal and effects prediction capability, and system survivability to operate in and through NBC environments
  - Large scale/rapid decontamination techniques

- **Counter-Paramilitary/Covert and Terrorist WMD Threats**
  - Capability to find WMD
  - Capability to render WMD safe
  - Enhance assault and personnel protective equipment
  - Exploitation of foreign design and know-how
  - Enhance decontamination capabilities

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4. Status of 1994 NPRC Recommendations and Overview of New Initiatives

Introduction. The NPRC's 1994 Report urged the Executive Branch to do more in addressing the problems of ensuring the development and deployment of highly effective technologies and capabilities to combat proliferation. The report identified 16 Areas for Progress where technologies and capabilities can and should be improved on a priority basis. The NPRC recommended $400 million in additional FY 1996 funding in these areas, with $230 million considered to be the responsibility of the DoD. These recommended investments were targeted to develop new programs that would allow better leveraging of existing capabilities to more effectively counter the proliferation of NBC weapons and their delivery systems. Using the Areas for Progress for which DoD is responsible as a basis, the Joint Staff established a prioritized list of capabilities that would be required by the CINCs for enforcement and execution of U.S. policy to counter proliferation. These required capabilities were briefed to the CINCs and endorsed by the Joint Requirements Oversight Council (JROC) for this year's report.

The new initiatives responding to the 14 Areas for Progress by the DoD, DOE, and U.S. Intelligence (Table 2.1) are summarized in Sections 4.1 - 4.3 below. Related ongoing and existing programs strongly related to countering proliferation are described in Section 5. The DoD, DOE, and U.S. Intelligence integrated responses to the identified shortfalls are described in Section 4.4. The CINCs' prioritized list of required operational capabilities related to countering proliferation are discussed in Section 4.5.

Interagency Coordination and Oversight of Programs for Countering Proliferation. The 1994 NPRC report identified several Executive Branch agencies that contribute to capability and technology development relevant to countering proliferation, and noted that significant steps had been taken by various departments and agencies to improve the organization of their efforts. These steps included creation of interagency committees to coordinate R&D in support of U.S. policy goals and priorities. The report indicated more needed to be done and called for a common program planning system permitting improved progress tracking and resource allocation among the various agency efforts; a better system for identifying gaps and overlaps in the effort; and a better mechanism to transition technology from the laboratory to the field.

The 1994 NPRC recommended to the National Security Council (NSC) the creation of an interagency Technology Working Group (TWG) within the NSC structure. The TWG would be charged with reviewing all the technology efforts underway in the various agencies that pertain to nonproliferation. The report also recommended that the TWG be integrated with the other groups addressing important proliferation issues. Subsequent to this recommendation, the President established, in August of 1994, the Nonproliferation and Arms Control Technology Working Group (NPAC TWG) as the mechanism for coordinating arms control and nonproliferation research and development. The NPAC TWG is cochaired by DoD, DOE, and ACDA.

The NPRC report proposed two other actions to help safeguard against future redundancies: 1) employ a common technology taxonomy across the community to help standardize terms of reference and facilitate coordination of programs to avoid duplication; and 2)

use a taxonomy based upon fundamental science, technology and engineering disciplines, vice one based upon platforms, missions, or functionalities, to provide the clearest comparison between various programs and aid in identifying unwarranted duplication.

To comply with these recommendations several actions have been taken. The CPRC charter has been extended by Congress through 1996 to continue the review and evaluation of DoD, DOE, and U.S. Intelligence programs related to countering proliferation, identify gaps and overlaps in these programs, and ensure continuing interagency coordination. The NPRC/CPRC review process has already served to minimize unnecessary duplication and overlap in technology R&D activities. Reviews at the CPRC Working Group level have been successful in identifying duplicative technology R&D proposals among the member agencies and in taking action to remove duplicative projects before funds could be obligated. It is the intent of the represented agencies to continue the CPRC as a standing committee beyond the 1996 mandate. Since the first report one year ago, the recommendations to create the Under Secretary-level standing Committee on Nonproliferation and Export Control and to combine a number of existing R&D coordinating entities into the interagency NPAC TWG have been implemented.

At the Department level, a single point of contact for counterproliferation programs within the DoD has been identified and delegated to the Assistant to the Secretary of Defense for Atomic Energy (ATSD(AE)) and his Deputy for Counterproliferation (DATSD(AE)(CP)). The DATSD(AE)(CP) is responsible for coordinating DoD's counterproliferation programs and, as discussed below, managing DoD's new initiative for countering proliferation, the Counterproliferation Support Program. The central focus of the Counterproliferation Support Program is to leverage targeted RDT&E programs to expedite the transition of technologies from the laboratory to the field. Consultation with the Joint Staff, including the JROC, the Director for Defense Research and Engineering (DDR&E), the Deputy Under Secretary of Defense for Acquisition and Technology (DUSD(A&T)), DOE, U.S. Intelligence, the Assistant Secretary of Defense for International Security Policy (ASD(ISP)), the Ballistic Missile Defense Organization (BMDO), and the Services is continuing.

To further ensure coordination between DoD and DOE R&D activities associated with countering proliferation, DoD and DOE have signed a Memorandum of Understanding (MOU) for the Conduct of Counterproliferation Research and Development. The MOU establishes a relationship between the Departments to enhance counterproliferation-related R&D activities and eliminate unnecessary duplication of effort. A DoD/DOE Senior Management Review Group has been established to implement the MOU and facilitate the identification of DoD counterproliferation-related technology needs, review program progress, and make program adjustments as necessary.

Overview of the New Initiatives. Since the 1994 NPRC Report to Congress, the DoD, DOE and U.S. Intelligence have implemented a variety of new programs and initiatives to address the shortfalls in operational capabilities identified by the NPRC. These initiatives were established to supplement the approximately $4.1 billion investment by the DoD and DOE budgeted in FY 1996 for ongoing/preexisting programs that are strongly related to countering proliferation. (Of the $4.1B, $3.8B is from DoD, of which $2.4B is in BMDO's request for RDT&E funding for

active missile defense, and $0.3B is from DOE. U.S. Intelligence investment is discussed in the Intelligence Annex.) This figure will be refined as Departments continue to identify related programs and R&D activities during their budget review processes. These new initiatives are briefly summarized in Sections 4.1 - 4.3 below.

New Initiatives

- DoD's Counterproliferation Support Program (Section 4.1.1)
- Consolidation of DoD Chemical and Biological Defense Programs (Section 4.1.2)
- Joint Staff Missions and Functions Study (Section 4.1.3)
- DoD Biological Defense Vaccine Acquisition Program (Section 4.1.4)
- Enhanced DoD Program for Cruise Missile Defense (Section 4.1.5)
- DOE Initiatives in Proliferation Prevention (Section 4.2)
- New U.S. Intelligence Initiatives (Section 4.3)

4.1 New DoD Initiatives

4.1.1 DoD's Counterproliferation Support Program. The Counterproliferation Support Program was established to address DoD's responsibilities in responding to the 1994 NPRC Areas for Progress. The Counterproliferation Support Program was instituted in August 1994 by a Program Decision Memorandum (PDM Number 1, dated 16 August 1994) from the Deputy Secretary of Defense. The PDM directed the ATSD(AE) to develop a Program Execution Plan and a Program Management Plan for implementing the program. ATSD(AE) and his Deputy for Counterproliferation are responsible for managing the Counterproliferation Support Program and serve as the central point of contact for related DoD programs. The Counterproliferation Support Program has been developed in consultation with the NPRC, the Joint Staff, the Services, DoD executing agencies, and cognizant components of Office of the Secretary of Defense (OSD).

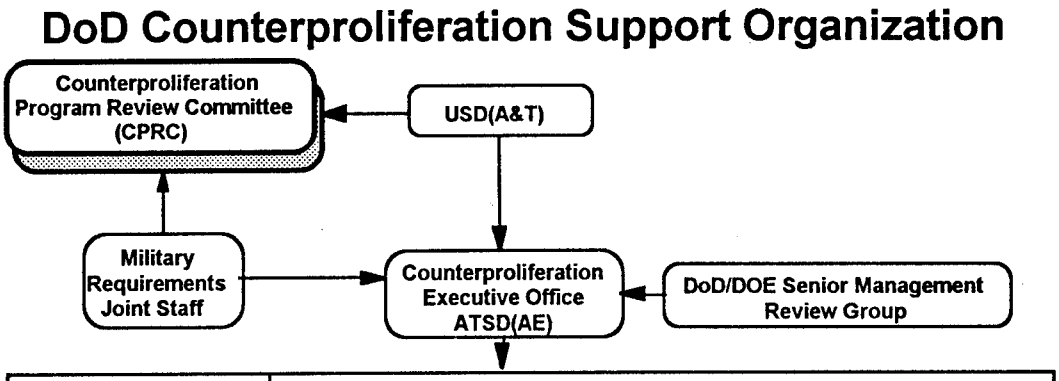
The Counterproliferation Support Program is part of DoD's larger program of ongoing R&D and acquisition programs that comprise DoD's total response to countering the WMD threat. The goal of the Counterproliferation Support Program is to improve specific military counterproliferation capabilities by building upon ongoing programs in the Services, DoD agencies, DOE, and U.S. Intelligence to: address major gaps in deployed capabilities; leverage existing capabilities by accelerating ongoing programs; and enhance the development of high payoff technologies.

The Counterproliferation Support Program's FY 1996 budget is $108.2 million. In addition, $57 million was added to the existing cruise missile defense programs (in the FY 1996 President's Budget Submission) which brings the total DoD enhancement for FY 1996 to $165.2

million. While the NPRC, in its 1994 Report, recommended that DoD budget $230 million for additional counterproliferation activities, evaluation of this program in the context of other pressing DoD priorities led to the lower funding level. Congress "jump started" the Counterproliferation Support Program by directing that $60 million be spent in this area in FY 1995. This program is underway and is summarized below and described in more detail in Section 5.1.

Figure 4.1 summarizes the management structure, including the interagency coordination committees, and the project areas that currently constitute the FY 1996 Counterproliferation Support Program. A proposed interagency coordinating committee will be the main body for reviewing DoD counterproliferation initiatives, making recommendations to the Deputy Secretary of Defense for future program investments, and chartering subgroups as needed to address specific areas in support of program review activities. The Counterproliferation Support Program is being managed through existing executive agents to plan and execute the augmented programs to ensure proper coordination with ongoing efforts in each project area.

Table 4.1 maps the Counterproliferation Support Program projects into the 14 DoD, DOE and U.S. Intelligence Areas for Progress identified by the 1994 NPRC. The Counterproliferation



Initiatives	Counterproliferation Support Program Enhanced Program Objectives
• BW/CW Detection & Characterization	• Early fielding of standoff and point detection and characterization systems
• Individual/Collective Protection and Decontamination	• Restoration of funding for BW/CW Decon Tech Base • Early fielding of JSLIST and AICPS • Joint NBC Simulation, Training ,Operations Planning and Doctrine Development
• Hard WMD Target Characterization and Defeat	• Development and fielding of enhanced target characterization systems; collateral effects mitigation and enhanced lethality weapons; target planning aids; tunnel defeat
• Paramilitary/Terrorist WMD Threats	• Advanced concepts for detecting and rendering safe BW/CW • Protection of military facilities/mobilization nodes • Enhanced BW/CW incident training and readiness
• Detect & Track WMD Shipments	• Tracking of WMD shipments by sea
• Special Activities	• Planning support, analysis and reporting • Special projects and contingency

Figure 4.1: DoD Counterproliferation Support Program Organization and Overview

Table 4.1:
1994 NPRC Areas for Progress and DoD's Counterproliferation Support Program

Areas for Progress* [Recommended Program Manager]	**DoD Portion of Recomm. FY96 Increases [$M]**	**CP Support Program FY96 President's Budget [$M]**
A) Real time detection/characterization of BW/CW agents including stand-off capability [INTELL/DoD]	38.0	23.6
B) Underground structures detection and characterization [INTELL/DoD]	37.0	13.1
C) Hard underground target defeat including advanced non-nuclear weapons capable of holding counterforce targets at risk with low collateral effects [DoD]	40.0	49.9***
D) Detection and tracking of shipments and control and accountability for stocks of WMD-related materials [DOC/INTELL/DOE] [DoD]**	0.0	2.9
E) Capability to detect, locate, and render harmless WMD in the US [DoD/DOE]	10.0	5.1
F) Enhancement of collection and analysis of intelligence [INTELL] [DoD]**	10.0	1.9
H) Support conclusion of verifiable Comprehensive Test Ban Treaty [ACDA/DOE]	NA	
I) Capability to detect, locate, and disarm, with a high assurance and in a timely fashion, outside the US WMD hidden by a hostile state or terrorist in a confined area [DoD]	15.0	(included in Area E above)
J) Passive defense capabilities enabling military operations to continue in contaminated conditions - actual or threatened (low cost, lightweight) [DoD]	15.0	11.7
K) Rapid production of protective BW vaccines [DoD]	15.0	0.0
L) Detection and interception of low flying/stealthy cruise missiles [DoD]	50.0	****
M) Transparency and control of foreign fissile material [DOE]	NA	
O) Intercept capability in boost phase [DoD]	Adequately Funded	
P) Prompt mobile target kill [DoD]	Adequately Funded	
• Totals:	**$230M**	**$108.2M**

* Areas not related to DoD, DOE or U.S. Intelligence responsibility are not shown. See Table 2.1 for a complete listing of the Areas for Progress

** The NPRC Report did not include DoD responsibilities in this area. The CPRC has corrected this oversight and included these responsibilities in this area.

*** While other entries in this column represent incremental increases over existing programs, in this area ongoing work was moved under the Counterproliferation Support Program at the direction of the Deputy Secretary of Defense. This entry shows the total of the incremental increases and ongoing work in this area ($31.4M + $18.5M, respectively)

**** An additional $57M has been added to an existing cruise missile defense program which is not part of the Counterproliferation Support Program (see Section 4.1.5).

Support Program is currently responding to 8 of these 14 areas (Of the 6 remaining areas, two were judged by the NPRC to be adequately funded, two are the primary responsibility of the DOE, and two areas are funded under other DoD programs.) While the Counterproliferation Support Program's total FY 1996 budget is less than the level recommended by the NPRC for DoD's portion of the suggested effort, by focusing its limited budget on high payoff areas and leveraging existing programs by adding funding to accelerate project schedules and deliverables, we believe that we can attain modest gains in the near term, and, by the end of the decade, the Counterproliferation Support Program will have achieved significant advancements in operational

capabilities in most of the identified Areas for Progress. To enhance military capabilities, emphasis has been placed on accelerating the deployment of enhanced military capabilities and accelerating RDT&E of technologies that will lead to rapid fielding of operational systems.

4.1.2 Consolidation of DoD Chemical/Biological Defense Programs. DoD's Chemical/Biological Defense (CBD) Program has been restructured to reflect congressional direction to improve jointness and consolidate historically separate Service funding lines into an integrated DoD-wide program. While the constituent projects of the CBD program are not new, their consolidation is expected to result in a more efficient and cost-effective program to better meet the passive defense needs of the combatant commanders. The CBD project managers are also serving as the project managers for those areas of the Counterproliferation Support Program involving CBD activities. The CBD project managers will work with the ATSD(AE)'s Deputy for Chemical and Biological Matters (DATSD(AE)(CBM)) to ensure an integrated, coordinated program in this area. DATSD(AE)(CBM), in turn, will coordinate DoD's CBD Program with DATSD(AE)(CP) to ensure appropriate focus of efforts between the CBD Program and the Counterproliferation Support Program. A Joint Program Office for Biological Defense (JPO-BD) has also been created to provide management oversight for critical BW defense acquisition programs, including BW vaccine production and BW agent battlefield detection programs.

The consolidated CBD Program provides development and procurement of systems to enhance the ability of U.S. forces to deter and defend against BW/CW agents during regional contingencies. Joint and Service-unique CBD programs are structured to support the framework of the three tenets of BW/CW defense: contamination avoidance (reconnaissance, detection and warning), force protection (individual and collective protection and medical support), and decontamination. Within the contamination avoidance area, sensors for joint task forces, mobile BW/CW reconnaissance, and systems capable of detecting multiple BW/CW agents and characterizing new agents are being developed. Technological advances are being pursued in coordination with the Counterproliferation Support Program in remote detection, miniaturization, lower detection limits, logistics supportability, and biological detection capability. In the force protection area, improved mask systems are being developed and advanced protective clothing is being developed under a joint program which will reduce the weight, heat stress, and logistics burden of current gear. Medical research is providing improved prophylaxes, antidotes, treatments, vaccines, and medical casualty management systems. Lightweight BW/CW protective shelters and integrated collective protection technology advances are also supported. In the decontamination area, modular decontamination systems are being developed and technology development programs are supported to examine advances in sorbents, coatings catalysis, and physical removal. The CBD Program also includes projects to protect U.S. forces from nuclear and radiological weapons effects, including detection and warning sensors, individual and collective protection, medical response, and decontamination.

In summary, DoD's CBD Program is focusing with the Counterproliferation Support Program on a jointly integrated, balanced approach to obtaining needed capabilities for our forces within affordability constraints and in a way that supports U.S. policy for countering proliferation. This program is described in more detail in Section 5.1.6.

4.1.3 The Joint Staff Missions and Functions Study. In 1994 a study group, comprised of members and representatives from the CINCs' staffs, the Services, the Joint Staff, the Defense Nuclear Agency (DNA), BMDO, DCI's Nonproliferation Center (NPC), and the National Defense University's (NDU) Center for Counterproliferation, was formed to address the following issues associated with counterproliferation:

- Counterproliferation as a Mission for U.S. Armed Forces
- Organizational Arrangements
- Relationship Between the CINCs and U.S. Intelligence
- Operational Concepts

The study group identified a number of special considerations that the warfighting CINCs must deal with in executing U.S. counterproliferation policy and meeting its objectives. The CINCs, Services, and Joint Staff are currently engaged in planning activities that have implications for the total U.S. Government effort to combat proliferation of NBC weapons and material, and their means of delivery. While the CINCs are today fully engaged in the counterproliferation effort, a tailored planning process will begin to pursue new insights, efficiencies, recommendations, and prospective initiatives that, collectively, will provide the CINCs even greater capabilities to respond to proliferation and associated threats.

4.1.4 The DoD Biological Defense Vaccine Acquisition Program. In February 1994, at the request of the Defense Acquisition Board (DAB), the JPO-BD determined that there was sufficient industry interest in providing vaccines for BW agents to the DoD to reconsider the establishment of a Government-owned, contractor-operated production facility. Based on this determination, the USD(A&T) recommended that the Deputy Secretary of Defense pursue a vaccine production facility that is contractor-owned, contractor-operated (COCO), instead of the original recommendation for a government-owned, contractor-operated facility. That acquisition strategy has evolved from seeking a single contractor to provide all vaccine needs at a single facility to one involving multiple purchase options under a single prime contractor. While the Deputy Secretary has not made a final decision on the approach, he has instructed the ATSD(AE) to pursue the COCO course of action. The JPO-BD has initiated an independent evaluation to provide a cost-effectiveness analysis of this approach to acquiring BW vaccines. The U.S. Army Medical Research Acquisition Organization issued a draft Request for Proposal (RFP) detailing the approach and asking for a more formal response from industry. A bidders briefing is planned to follow the response. Industry responses will be evaluated and incorporated into a final RFP to be issued by the end of FY 1995.

The DAB, at its meeting scheduled for May 1995 to review JPO-BD Programs, will review the responses from the draft RFP review and the JPO-BD's cost-effectiveness study to resolve any remaining concerns over the acquisition approach. Based on this information, the JPO-BD intends to recommend to the USD(A&T) that a final decision be made to finalize the acquisition approach. The JPO-BD will announce that decision, giving pre-notification to Congress, by issuing a press release. This program is being worked as part of DoD's FY 1997 Program Objectives Memorandum (POM) budgeting process.

4.1.5 Enhanced DoD Program for Cruise Missile Defense. A substantial DoD program is underway to develop sensors and fire control capabilities that are effective against low flying/ stealthy cruise missiles. The added FY 1996 increment of $57 million provides additional sensor platforms and fire control capabilities to accelerate the program.

4.2 New DOE Initiatives

DOE's activities focus on nonproliferation and draw upon the extensive scientific and technical expertise of the National Laboratories. In accordance with the DoD/DOE MOU, DoD funds the National Laboratories to develop prototype technologies in support of DoD's Counterproliferation Support Program. These efforts are included in the description of the Counterproliferation Support Program (Section 5). The DOE's nonproliferation and nuclear threat reduction activities cover the spectrum from proliferation prevention to nuclear accident prevention and response. The FY 1996 DOE budget contains a requested increase of $70 million over FY 1995. This increase will enable DOE to continue the expansion of its nonproliferation and nuclear threat reduction activities and programs as identified in the Department's Strategic Plan. DOE is increasing the scope of the Department's nonproliferation and national security efforts in response to those Areas for Progress identified in the 1994 NPRC Report associated with the DOE mission as shown in Table 4.2: support to a verifiable Comprehensive Test Ban Treaty (CTBT), transparency and control of foreign fissile material, and detection and tracking of WMD-related shipments. These new initiatives are described below and matched to the 1994 NPRC identified shortfalls they address in Table 4.3 (in Section 4.4).

Table 4.2: 1994 NPRC Areas for Progress and DOE's New Nonproliferation Initiatives

Areas for Progress* [Recommended Program Manager]	DOE Portion of Recomm. Increases [$M]	New DOE Initiative FY96 Funding [$M]
D) Detection and tracking of shipments and control and accountability for stocks of WMD-related materials [DOC/INTELL/DOE]	TBD	1.3**
E) Capability to detect, locate, and render harmless WMD in the US [DoD/DOE]	0.0	0.0
H) Support conclusion of verifiable Comprehensive Test Ban Treaty [ACDA/DOE]	TBD	0.0
M) Transparency and control of foreign fissile material [DOE]	15.0	70.0***
• Totals:	TBD	$71.3M

* Areas not related to DOE responsibility are not shown. See Table 2.1 for a complete listing of the Areas for Progress.
** Included in DOE's Technology Base
*** Supports Area for Progress D also.

4.2.1 CTBT R&D Program. DOE is responsible for the U.S. Government R&D functions for monitoring nuclear explosions to verify a CTBT. This responsibility includes the FY 1994 transfer of DoD CTBT R&D responsibilities to DOE. The DOE research program builds on

the broad base of National Laboratory expertise developed historically in support of the nuclear weapons program and includes R&D for detecting, locating, identifying, and characterizing nuclear explosions in all environments. DOE has committed to a cooperative program that draws from the core competencies of the National Laboratories, other government agencies, and the private sector (academia and industry). The integration of resources under a common direction allows the program to be flexible and responsive to changing technical and policy requirements while maximizing the effectiveness of funding appropriations. DOE will develop and demonstrate appropriate technologies, algorithms, procedures, and integrated systems with an emphasis on cost-effective and timely completion of efforts.

There is significant interest within the U.S., as expressed in the 1994 NPRC Report, and throughout the international community in concluding a verifiable CTBT. U.S. ratification of a CTBT will depend in part on a combination of national and international monitoring systems sufficient to meet the requirements for effective verification. Negotiating the components of the international monitoring system will likely require the U.S. to develop and demonstrate cost-effective monitoring measures. The CTBT monitoring system should permit high confidence identification of nuclear explosions of a few kilotons in a timely manner. The international CTBT monitoring system is considering seismic, radionuclide sampling, hydroacoustic, infrasonic, and certain on-site inspection technologies to monitor underground, underwater, atmospheric, and high altitude near space environments. Many factors influence the final choice of technologies that will comprise the international monitoring system. System costs, monitoring effectiveness, availability of technology, and false alarm rates are key factors.

The DOE CTBT verification and monitoring R&D program, established as a formal program beginning in FY 1995, is based on a strong technical base of activities supporting existing bilateral and multilateral U.S. nuclear testing initiatives. While no new funds are requested in FY 1996, the consolidation of CTBT-related technology development into a single program area has eliminated duplication and maximized the effectiveness of requested funding. The program elements include the technologies being considered for the international monitoring system, as well as space-based monitoring systems and automated data processing. It is imperative that DOE conduct the R&D necessary to allow the administration to negotiate an international monitoring regime that meets U.S. needs and objectives, and is complementary to the national monitoring system.

4.2.2 Material Protection, Control, and Accounting (MPC&A) Program. DOE has been very successful in coordinating U.S.-Russian Federation laboratory-to-laboratory technical expert interactions for the direct purpose of implementing upgraded fissile material safeguard procedures and installing state-of-the-art safeguard equipment at facilities throughout the Russian Federation. This program is being used to expedite progress in the installation of this equipment at key facilities in Russia with the help of Russian technical experts. Similar interactions with other states of the FSU are in initial stages, but have the same basic goals. Lab-to-Lab activities were initiated during FY 1994, and have continued into FY 1995 solely from DOE funds. Complementary to the lab-to-lab effort is the U.S.-Russian Federation government-to-government nuclear material safeguards initiative. The DOE is assuming responsibility for a portion of this latter activity beginning in FY 1995.

Six DOE laboratories are actively collaborating with Russian counterparts to implement an integrated MPC&A plan. In the first six months of the program, excellent progress in several important directions has been made. Substantial technical work, including physical protection upgrades and demonstrations of MPC&A technology, has been accomplished at the Kurchatov Institute and the Institute of Experimental Physics (Arzamas 16). The work includes the application of a wide range of physical protection and material control and accounting equipment supplied both by the United States lab-to-lab program and by Russian suppliers. During FY 1995, these demonstration facilities will be used to introduce the improved technology to Russian plant operators in preparation for implementation at their facilities.

Equally important for long-term success in improving FSU nuclear weapons MPC&A are the establishment of effective working relationships with six principal Russian Institutes in the Ministry of Atomic Energy (MINATOM) nuclear weapons complex, the Kurchatov Institute, and the Institute of Physics and Power Engineering at Obninsk. In addition to the weapons laboratories, the group also includes representatives from the nuclear material processing facilities at Tomsk-7 and Mayak. These eight Russian organizations are responsible for large quantities of highly enriched uranium and plutonium stored within their facilities and for dissemination of MPC&A technology throughout the Russian nuclear weapons complex.

4.2.3 Nuclear Smuggling Detection and Tracking Program. Under the Verification and Control Technology Program established in FY 1995, DOE is conducting various technical program planning activities addressing the detection and tracking of illicitly transported WMD materials. This has resulted in the formulation of an integrated program plan on nuclear smuggling attribution to be conducted, funding authorization permitting, beginning in FY 1996. The objective of the program is to build the technical foundation for a national capability to identify the source of the material and the participants in nuclear smuggling incidents. The ability to perform an attribution assessment for a specific nuclear smuggling incident would directly benefit U.S. Government goals in prevention, reaction, and neutralization of nuclear smuggling incidents by providing the information needed to assess the degree of threat in a particular incident and to choose an appropriate response.

The proposed work focuses on the development of a DOE system that will respond to the interdiction of special nuclear materials and will perform forensic attribution of origin and route characteristics. This effort involves three primary issues: prioritization of isotopic signatures and associated analyses, development of environmental indicators, and the preservation of forensic indicators during handling. The scientific basis for the proposed work rests in the combined capability of the National Laboratories to address both source and route attribution questions from material analysis and technical evaluation of the interdiction event. Physical facilities as well as human resources to address the difficult and technological assessments have been developed through the programs of the DOE and its predecessors over the past 50 years. Total FY 1996 funding required to complete these nuclear smuggling detection and tracking program tasks is approximately $1.3 million.

4.3 New Intelligence Initiatives

Details pertaining to U.S. Intelligence's new and continuing initiatives to counter proliferation are provided in the Intelligence Annex to this report.

4.4 Integrated Actions - Addressing the Areas for Progress

Table 4.3 organizes the new DoD, DOE and U.S. Intelligence initiatives related to countering proliferation in terms of the Areas for Progress identified in the 1994 NPRC Report. Descriptions of these initiatives are provided in Section 5, Appendix C, and in the Intelligence Annex.

Table 4.3: Integrated New Initiatives and the Areas for Progress

1994 NPRC Areas for Progress* (Recommended Program Manager)	**New Initiatives** (Responsible Department)
A) Real-time detection and characterization of BW/CW agents including stand-off capability: [DoD/INTELL] - Field deployable, multi-vector BW/CW detection - Miniaturized BW/CW detector deployable on long endurance platforms capable of detecting a variety of BW/CW out to range >5 km in low concentrations - Airborne and ground based detectors capable of detecting and characterizing BW/CW agents in warfighting release concentrations at ranges out to 5 km	• Long range, eye-safe IR Lidar (DoD)[1,2] • UV Lidar for remote BW identification (DoD)[1,2] • Miniaturized BW point detectors (DoD)[1,2] • CW surface acoustic wave detector (DoD)[1,2] • BW/CW detector UAV integration (DoD)[1] • New Intelligence Initiatives (See Intelligence Annex)
B) Underground structures detection and characterization [INTELL/DoD]: - Data exploitation of all-source information to identify tunnel/ bunker construction - UGS capable of using a variety of sensing methods to map and determine use of underground structures - WMD nodal analysis to support target planning	• Advanced sensors: Tactical UGS and FLIR (DoD)[1] • Weapon borne BDA sensor (DoD)[1] • Tunnel defeat and vulnerability assessment (DoD)[1] • New Intelligence Initiatives (See Intelligence Annex)
C) Hard underground target defeat including advanced non-nuclear weapons (lethal or nonlethal) capable of holding counterforce targets at risk with low collateral effects [DoD]: - Advanced conventional penetrating weapons with smart fuze - Alternate warheads for wide area damage functional kill - High velocity kinetic energy weapons for deeply buried facilities - Collateral effects prediction capability	• Munition Effectiveness Analysis and Targeting Tool (DoD)[1] • Advanced penetrating weapon system (DoD)[1] • Enhanced weapon payloads (DoD)[1] • BW/CW agent neutralization weapons (DoD)[1] • Collateral effects phenomenology assessment (DoD)[1] • WMD target response/vulnerability assessment (DoD)[1] • Tunnel defeat and vulnerability assessment (DoD)[1] • Interferometric Terrain Aided Guidance system (DoD)[1]

1994 NPRC Areas for Progress* (Recommended Program Manager)	**New Initiatives** (Responsible Department)
D) Detection and tracking of shipments and control and accountability for stocks of WMD-related materials and personnel including worldwide WMD and dual-use item tracking [DOC/INTELL/DOE][DoD]** - Common structure, controlled, sharable database usable by all nonproliferation regime states to record/track critical exports - INTELL-wide, automated, all-source information exploitation system focused on key NP/CP countries of concern - Technical means--shared with non-allied states--for monitoring safety and security of stored or transportable nuclear materials	• Specific Emitter Identification system (DoD)[1] • Joint DoD/FBI FSU WMD smuggling study (DoD)[1] • MPC&A Program (DOE) • Nuclear Smuggling Detection and Tracking Program (DOE) • New Intelligence Initiatives (See Intelligence Annex.)
E) Capability to detect, locate and render harmless WMD in the U.S. [DoD/DOE]: - Tool box of NBC detection and rendering harmless technologies capable of being deployed with trained team on short notice	• Advanced technology for countering BW/CW (DoD)[1] • Protecting military facilities from WMD (DoD)[1] • Joint SOF WMD readiness exercises (DoD)[1]
F) Enhance collection and analysis of Intelligence [INTELL/DoD**]: - All-source data exploitation technology - Remote, cued, long dwell time sensors	• New Intelligence Initiatives (See Intelligence Annex)
H) Support conclusion of a verifiable Comprehensive Test Ban Treat [ACDA/DOE] - Monitoring and verification technology - Stockpile stewardship R&D	• CTBT R&D Program (DOE)
I) Capability to detect, locate and disarm, with high assurance and i a timely fashion, outside U.S. WMD hidden by a hostile state or terrorist in a confined area [DoD]: - Focus of concern that NEST-like capability not fully in place for OCONUS - Advanced render safe capability - Specialized training for EOD/NEST personnel	• Advanced technology for countering BW/CW (DoD)[1] • Protecting military facilities from WMD (DoD)[1] • Joint SOF WMD readiness exercises (DoD)[1]
J) Passive defense capabilities enabling military operations to continue in contaminated conditions - actual or threatened (low cost, light weight) [DoD]: - Bio-textiles capable of providing cheap, adequate protection to troops and civilians against skin contact with agents - CW/BW/RW decontamination equipment usable in urban environments - Chemical/biological agent detection and characterization	• Joint Service Lightweight Suit Technology (DoD)[1,2] • Advanced Integrated Collective Protection System (DoD)[1,2] • BW/CW decontamination tech base (DoD)[1] • Joint NBC simulation and training (DoD)[1] • Joint NBC operational planning and doctrine (DoD)[1] • Miniaturized BW detectors (DoD)[1,2] • CW surface acoustic wave detector (DoD)[1,2] • Joint Staff Missions and Functions Study (DoD)
K) Rapid production of protective BW vaccines [DoD]: - Capability to identify and rapidly develop vaccines - Vaccine production capability once vaccine is developed	• BW Vaccine Acquisition Program (DoD)
L) Detect and intercept low flying/stealthy cruise missiles [DoD]	• Enhanced Program for Cruise Missile Defense (DoD)
M) Transparency and control of foreign fissile material [DOE]	• MPC&A Program (DOE) • Nuclear Smuggling Detection and Tracking Program (DOE)
O) Intercept capability in boost phase [DoD]	
P) Prompt mobile target kill [DoD]	

* Areas G and N are not DoD, DOE or U .S. Intelligence areas of responsibilities and are not included in the table.
** Added by the CPRC to reflect DoD's role in this area.

Notes: [1] DoD program supplemented by the Counterproliferation Support Program
[2] DoD Chemical/Biological Defense Program

4.5 CINC Priorities for Counterproliferation Capabilities

The Joint Staff planners are continuing the ongoing process of working with the CINCs to refine counterproliferation priorities and required capability enhancements applicable across multiple warfighting mission areas. The CINCs put the highest priority on those areas where the most leverage could be exercised for getting enhanced capabilities out to the field quickly. This process resulted in a prioritization of capabilities that would be required by the CINCs for meeting the WMD proliferation threat. The CINCs' prioritized list of capabilities is provided in Table 4.4 and compared with the 1994 NPRC Areas for Progress (which were not prioritized). In terms of the seven functional areas related to countering proliferation, the CINCs' have the following priorities: 1) passive defense, 2) active defense, 3) counterforce, 4) battlefield surveillance, 5) strategic and tactical intelligence, 6) proliferation prevention, and 7) countering paramilitary/covert and terrorist WMD threats.

The Joint Warfighting Capabilities Assessment (JWCA) team, with inputs from the combatant commanders, carefully examined the capabilities required from a military warfighting perspective to address the very serious threat of NBC weapons in the CINCs' geographic Areas

Table 4.4: CINCs' Counterproliferation Capability Priorities

CINC Priority	NPRC Area for Progress*	CINCs' Counterproliferation Capabilities
1	A	• Detection/characterization of BW/CW agents
2	L	• Intercept cruise missiles
3	C	• Defeat underground targets
4	B	• Characterize and identify underground targets
5	F	• Collect and analyze intelligence
6	J	• Passive defense enabling operations
7	A/J	• Support for operations in NBC environment
8	K	• Biological vaccines
9	-**	• Planning and targeting for above ground infrastructure
10	-**	• BW/CW agent defeat
11	D	• Detection and tracking of shipments
12	P	• Prompt mobile target kill
13	-**	• Support for Special Operations Forces
14	E/I	• Locate, detect, and disarm WMD in CONUS/OCONUS
-***	H	[• Concluding a verifiable comprehensive CTBT]
-***	M	[• Transparency and control of foreign fissile material]
-****	O	[• Intercept capability in boost phase]

* Areas G and N are not the responsibility of DoD, DOE or U.S. Intelligence
** Not an NPRC Area for Progress
*** Not a CINC warfighting priority
**** Area judged to be adequately funded by the NPRC

of Responsibility. They also determined that some shortfalls existed in areas that were not included in the Areas for Progress. For example, while both the JWCA team and the NPRC assigned a high priority to defeating buried targets, the JWCA team added a priority area in "planning and targeting for above ground infrastructure." This reflects a recognition that many proliferation threats reside in surface locations, in addition to underground locations, and would also require enhanced capabilities to accurately target and attack. There would be greater numbers and types of surface NBC targets than underground targets, and surface targets are generally softer and requirements to limit collateral effects would be a major concern.

The CINCs' priority listing, which is not inconsistent with the findings of the 1994 NPRC, has been reviewed and adopted by the CPRC. The CINCs concentrated on those warfighting capabilities related to counterproliferation which could be effectively leveraged to achieve rapid fielding. Cruise missile defense was judged by the CINCs to be one such area based on recent developments in various sensor technologies related to detecting cruise missiles. Areas judged by the CINCs to require significant RDT&E, like ballistic missile boost phase defense, were not considered a priority area by the CINCs because of the relatively long lead times to achieve an operational capability. DoD's peacetime responsibility to support WMD antiterrorist operations is judged a high priority by both OSD and the Joint Staff.

As programs mature and evolve and some needs are met and others are identified, the prioritization of capabilities related to countering proliferation could change. The CPRC, working with the Joint Staff and the CINCs (through the JWCA process), has established a process for the continuing review of counterproliferation program priorities. This work is ongoing.

5. Detailed Review of Prior Programs Related to Countering Proliferation and New Programs Implemented in Response to the 1994 NPRC Report

Introduction. Section 1605 of the National Defense Authorization Act of 1995 directs that programmatic information be provided concerning prior programs, new programs, and programmatic options. The information to be submitted includes annual funding requirements and completion dates, as well as options for eliminating deficiencies identified by the Review Committee. The 1994 NPRC report provided guidelines for the implementation of capabilities developed in response to the Areas for Progress. These guidelines were established as the basis for future interagency program planning. Prioritized program recommendations from the JCS were also factored into the development of the 1995 report. The timing of investment impacts for the Areas for Progress are listed in Figure 5.1, which is reproduced from the 1994 NPRC report.

- **Near Term Impact (1996 - 97)**
  - Support CWC and BWC
  - Support conclusion of verifiable CTBT
  - Enhance HUMINT and MASINT collection and analysis
  - Shallow hard underground target defeat
  - Transparency and control of foreign fissile material
  - Safe disposition of foreign WMD-related materials (except fissile materials)
- **Mid Term Impact (1998 - 01)**
  - Remote detection and characterization of BW/CW agents
  - Underground structures detection and characterization
  - Detection, tracking, control and accountability for WMD-related materials and personnel
  - Detect, locate and render harmless WMD in U.S.
  - Passive defenses enabling continued operations
  - Rapid production of BW vaccines
  - Detection and intercept of stealthy cruise missiles
  - Mobile target kill
- **Far Term Impact (2002 +)**
  - Capability to detect, locate and disarm WMD in the United States and abroad
  - Deep, hard underground target defeat
  - Intercept in boost phase

Figure 5.1. Timing of Investment Impacts for the Areas for Progress

In the subsections that follow, the new DoD, DOE and U.S. Intelligence countering proliferation and nonproliferation initiatives in response to the NPRC report and prior existing/ongoing programs that are strongly related to countering proliferation are discussed. The new counterproliferation and nonproliferation initiatives were established to supplement the approximately $4.1 billion investment in FY 1996 for the ongoing DoD and DOE programs that are strongly related to counterproliferation. ($2.4B of DoD's $3.8B investment is for missile defense RDT&E.) DoD programs are described in Section 5.1 and organized in terms of the

seven counterproliferation functional areas: proliferation prevention, strategic and tactical intelligence, battlefield surveillance, counterforce, active defense, passive defense, and countering paramilitary/covert and terrorist WMD threats (Sections 5.1.1 - 5.1.7, respectively). Each program and constituent project are also listed in terms of the NPRC identified shortfalls in counterproliferation capabilities that they address. DOE nonproliferation programs are described in Section 5.2, and, at the direction of the Congress, those DOE programs involving deliverables to be developed to IOC are identified and described. U.S. Intelligence programs and activities are briefly summarized in Section 5.3, with the details supplied in the Intelligence Annex. Finally, Section 5.4 summarizes the near-, mid-, and long-term impacts of the new initiatives and previously existing programs in the same order they appear in Figure 5.1.

It should be noted that the CPRC review process is ongoing, as is the DoD counterproliferation program review being conducted by the Joint Staff, Services, and CINCs. The DoD programs described in Section 5.1 are included based on the CPRC's judgment of their relevance to counterproliferation at this time. The exact composition of which programs and projects constitute DoD's overall investment in counterproliferation capabilities is still evolving. This is due to the fact that many programs, especially R&D programs, may have dual applicability (e.g., both to general purpose warfighting and counterproliferation-related missions). As the review and study processes continue and as programs change and mature, those programs identified as strongly related to counterproliferation will need to be refined.

5.1 DoD Programs

5.1.1 Proliferation Prevention Programs

5.1.1.1 Introduction. DoD's role in proliferation prevention involves inspection, verification and enforcement support for nonproliferation treaties and WMD control regimes, supporting export control activities, working with U.S. Intelligence to identify candidate proliferants before they can acquire or expand their WMD capabilities, and, if so directed by the National Command Authority, planning and conducting interdiction missions to thwart proliferation activities.

5.1.1.2 New DoD Initiatives in Proliferation Prevention

Counterproliferation Support Program Projects. The Counterproliferation Support Program is directly supporting the deployment this year of the Navy's Specific Emitter Identification (SEI) system to improve DoD's capabilities to identify and track ships at sea suspected of transporting WMD and WMD-related materials. The Counterproliferation Support Program is also supporting a joint DoD/Federal Bureau of Investigation (FBI) effort to assess the threat of organized crime activities within the FSU directed at WMD smuggling and to determine whether DoD technologies, operational capabilities and training programs can benefit the FBI. These projects are summarized in Tables 5.1 and 5.2 and Appendix C (Table C.1). A Counterproliferation Support Program counterforce project, development of the Proliferation Path Assessment and Targeting System (PPATS) to assist in identifying critical steps in the

proliferation process, is also relevant to proliferation prevention. Additional details for this project are provided in the counterforce subsection (Section 5.1.4 and Tables 5.7 and 5.8).

5.1.1.3 Programs Ongoing Prior to the 1994 NPRC Report in Proliferation Prevention

DTSA and CTR Programs. Several ongoing projects managed by the Defense Technology Security Administration (DTSA) and the Cooperative Threat Reduction (CTR) or Nunn-Lugar Program play a major role in proliferation prevention. DTSA's mission is to ensure that international transfers of defense-related technologies, goods, services, and munitions are consistent with U.S. foreign policy and national security objectives. DTSA reviews export licenses for their potential to contribute to the proliferation of WMD, missile delivery systems, and other significant military capabilities. Under the CTR Program, DoD assists states of the FSU to destroy, transport, store, disable, and safeguard WMD; establish verifiable safeguards against their proliferation; facilitate the demilitarization of defense industries and conversion of military technologies and capabilities to civilian purposes; expand military-to-military contacts between the U.S. and FSU states; and support the International Science and Technology Centers to aid in transitioning former FSU weapons scientists to peaceful endeavors. These programs are summarized in Appendix C (Tables C.10 and C.12), which includes their FY 1996 budget profiles.

OSIA Programs. The On-Site Inspection Agency (OSIA) is responsible for several activities associated with proliferation prevention. OSIA is a joint Service DoD organization responsible for implementing inspection, escort and monitoring requirements under the verification provisions of several U.S. international arms control treaties and confidence-building agreements. OSIA's Safeguards, Transparency, and Irreversibility (STI) Program focuses on inspection and escort support for anticipated international agreements relating to plutonium stockpile and plutonium production reactor monitoring. These programs are summarized in Appendix C (Table C.11), which includes their FY 1996 budget profiles.

OSD Critical Technology Support Program. This program develops and publishes the congressionally-mandated Militarily Critical Technologies List, the primary source document identifying leading edge technologies for proliferation control of WMD and advanced conventional weapons. DTSA is the executing agency for this project. Additional project details are provided in Appendix C (Table C.12), which includes a FY 1996 budget profile.

ARPA Programs. ARPA has a program to demonstrate the capabilities of seismic and non-seismic monitoring systems for use in verification of the Comprehensive Test Ban, as well as provide technical support to nuclear test ban treaty negotiations. Additional project details are provided in Appendix C (Table C.7), which also includes its FY 1996 budget profile.

DNA Programs. DNA is responsible for the Chemical Weapons Convention (CWC) Verification Technology program, which focuses on the technologies required for multi-national verification of the CWC, and the Strategic Arms Reduction Treaty (START) I and II Verification Technology program which addresses technologies to enable verification of nuclear weapons

treaties, including non-intrusive detection of nuclear reentry bodies. These programs are summarized in Appendix C (Table C.8), which also includes their FY 1996 budget profiles.

Air Force Programs. The Air Force has two programs in this area, the Treaty Verification Support program which is directed at ongoing START verification efforts, and the Nuclear Detonation Detection System, which is aimed at improving capabilities to detect nuclear detonations. These programs are described in more detail in Appendix C (Table C.5), which also includes their FY 1996 budget profiles.

Table 5.1: Key DoD Counterproliferation Programs in Proliferation Prevention

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Specific Emitter Identification System (SEI)	- Deployment and operation of equipment to improve the Navy's ability to identify and track WMD-related shipments at sea	D	Navy	2.786	604160D
- Joint DoD/FBI FSU WMD Smuggling Study	- Assess applicability of DoD technologies, capabilities and training to FBI counterproliferation activities	D	FBI	TBD**	605160D
- PPATS Project	- See Section 5.1.4	(See Section 5.1.4)			
• **Prior CP-Related Programs** - OSIA Programs	- Implementation of inspection, escort, monitoring and treaty verification measures	D/M	OSIA	84.599	O&M
- CTR Programs	- Assisting FSU states in destroying, controlling and demilitarizing WMD and the WMD infrastructure	D/M	ATSD (AE)	371.000	O&M
- OSD Critical Technology Support Program	- Preparation of the Military Critical Technologies List to support export control activities	D	DTSA	2.644	605110D
- ARPA Programs	- Seismic and nonseismic monitoring of CTB	H	ARPA	14.100	602301E
- DNA Programs	- CWC and START Verification Technology RDT&E	D/M	DNA	24.941	603711H
- USAF Treaty Veirification Support	- Support of ongoing START treaty verification efforts	M	Air Force	0.998	305145F
- USAF Nuclear Detonation Detection System	- Detection of nuclear detonations, including test explosions	H	Air Force	16.277	305913F

* Refer to Table 2.1

** The amount funded will depend on the conclusions of studies being conducted in 1995.

5.1.1.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.2 illustrates how the proliferation prevention programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.2: DoD Programs Addressing Shortfalls in Proliferation Prevention Capabilities

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented	Status of Shortfalls
Inspection Support • Capability to monitor and detect suspect activities using cooperative and noncooperative means	• **Prior Programs** - OSIA Programs - DNA Programs - ARPA Programs - Air Force Programs	• Cooperative means outside the FSU and noncooperative detection and monitoring of suspect activities are the responsibility of U.S. Intelligence*
• Safe destruction of treaty limited items	• **Prior Programs** - CTR Programs - OSIA Programs	• Adequately supported
• Facility inspection for material detection, analysis and transport/ safeguard	• **Prior Programs** - OSIA Programs - CTR Programs - DNA Programs	• Rapid response transport/ safeguard operations
• Remote monitoring capability	• Responsibility of U.S. Intelligence*	• Responsibility of U.S. Intelligence*
Support for Export Control Programs • Automation of capability to identify proliferation paths and activities	• **New Programs** - Proliferation Path Assessment and Targeting System	• Automation of capability to identify proliferation paths and activities
• Country-specific data to include technical paths for WMD development and supply relationships	• Responsibility of U.S. Intelligence*	• Responsibility of U.S. Intelligence*
• Capability to fuse multisource data	• **Prior Programs** - Air Force Programs	• Adequately supported
• Identification and tracking of critical materials and items	• **New Programs** - Specific Emitter Identification System - Joint DoD/FBI FSU WMD smuggling study • **Prior Programs** - DTSA Programs - OSD Critical Technology Support Program	• Additional capability to identify and track critical materials and items

* See the Intelligence Annex to this report.

5.1.2 Strategic and Tactical Intelligence Programs

5.1.2.1 Introduction. In the strategic and tactical and intelligence area, DoD supports a wide array of activities and works closely with U.S. Intelligence to meet the intelligence needs of the nation. These programs are described in the Intelligence Annex. The Counterproliferation Support Program is also making a modest contribution in this area as well. Table 5.3 lists the intelligence-related programs.

5.1.2.2 New DoD Initiatives in Strategic and Tactical Intelligence

Counterproliferation Support Program Projects. Several Counterproliferation Support Program projects in the proliferation prevention and battlefield surveillance functional areas are relevant to the strategic and tactical intelligence area, including the Specific Emitter Identification (SEI) system to track WMD-related shipments at sea and the tactical Unattended Ground Sensor (UGS) system for underground WMD facility surveillance, characterization and BDA. These projects are briefly described in Sections 5.1.1 and 5.1.3, respectively.

5.1.2.3 Programs Ongoing Prior to the 1994 NPRC Report in Strategic and Tactical Intelligence. These programs are described in the Intelligence Annex to this report.

Table 5.3: Key DoD Counterproliferation Programs in Strategic and Tactical Intelligence

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Proliferation Prevention Projects	- Deployment of SEI system prototypes (Sec. 5.1.1)	(See Section 5.1.1)			
- Battlefield Surveillance Projects	- Tactical UGS system RDT&E (Sec. 5.1.3)	(See Section 5.1.3)			
• **Prior CP-Related Programs** - Joint DoD/INTELL Programs	- See Intelligence Annex	(See Intelligence Annex)			

* Refer to Table 2.1

5.1.2.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.4 illustrates how the strategic and tactical intelligence programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. The details, including a discussion of the shortfalls remaining to be addressed, are provided in the Intelligence Annex.

Table 5.4:
DoD Programs Addressing Shortfalls in Strategic and Tactical Intelligence Capabilities

Shortfalls Identified by 1994 NPRC	Programs and Initiatives Implemented*	Status of Shortfalls*
• Reliable methodology for detecting WMD programs early in their development including motivations, plans and intentions of policy makers		
• Effective methods to understand and counter diverse concealment, denial and deception practices--particularly the identification and characterization of underground facilities and dual use facilities	• **New Programs*** - Tactical UGS (see Sec. 5.1.3)	
• Nonoptimal exploitation of collected information because of lack of intelligence community connectivity and effective processing and analytical tools		
• Ability to locate and identify NBC weapons activity		
• Identification and characterization of technology transfer networks supporting the development of WMD	• **New Programs*** - SEI System (see Sec. 5.1.1)	
• Intelligence preparation of the battlefield - Characterization of WMD forces and infrastructure - Identification of targeting of WMD and their missile delivery systems - Battle Damage Assessment - Fusion of WMD-related sensor and signature data	• **New Programs*** - Battlefield Surveillance and Counterforce Projects (see Sec. 5.1.3 and 5.1.4)	
• Real-time intelligence to the war fighter including sensor-to-shooter linkage in operational command-control		

* See the Intelligence Annex to this report.

5.1.3 Battlefield Surveillance Programs

5.1.3.1 Introduction. In the battlefield surveillance area, DoD is improving capabilities to detect, identify and characterize WMD forces and associated infrastructure elements in a timely manner to support targeting, mission/strike planning, WMD counterforce actions, and prompt, post-strike BDA activities. Key emphasis is being placed on continuous wide-area surveillance; detecting mobile targets, particularly WMD-armed mobile missile launchers; detection and characterization of hardened underground WMD facilities; and improving BDA capabilities. Projects involving battlefield surveillance sensor development are underway. (Programs involving the detection and identification of NBC agents on the battlefield are discussed under the passive defense functional area, Section 5.1.6.) This effort is being coordinated with U.S. Intelligence; the details of which are provided in the Intelligence Annex.

5.1.3.2 New DoD Initiatives in Battlefield Surveillance

Counterproliferation Support Program Projects. The Counterproliferation Support Program is supporting several projects in this area, including: 1) developing enhanced sensor technologies, including tactical UGS and airborne FLIRs, for battlefield (fixed underground) and target surveillance, characterization, BDA, and collateral effects monitoring; 2) developing a weapon borne sensor to enhance underground target BDA; and 3) integrated operational testing to support the rapid fielding of integrated battlefield surveillance and counterforce capabilities. The DOE National Laboratories are also providing technology R&D technical support in each of these project areas. These projects are summarized in Tables 5.5 and 5.6 and in Appendix C (Table C.1).

5.1.3.3 Programs Ongoing Prior to the 1994 NPRC Report in Battlefield Surveillance. These programs are described in the Intelligence Annex.

Table 5.5: Key DoD Counterproliferation Programs in Battlefield Surveillance

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Sensor Technology Project	- Continuous surveillance, target characterization and BDA of WMD targets (fixed, underground and mobile)	B/C	DNA ARPA	9.335	603160D
• **Prior CP-Related Programs**	- See Intelligence Annex	(See Intelligence Annex)			

* Refer to Table 2.1

5.1.3.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.6 illustrates how the battlefield surveillance programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.6: DoD Programs Addressing Shortfalls in Battlefield Surveillance Capabilities

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented*	Status of Shortfalls*
• Wide area and continuous coverage with flexible focus	• **New Programs*** - Tactical UGS • **Prior Programs** - See Intelligence Annex	• Continuous coverage
• Automation of target detection and sorting	• **New Programs*** - Data Fusion and Signatures • **Prior Programs** - See Intelligence Annex	• Deployed capability
• Real-time NBC agent detection and identification	• **New Programs*** - Passive Defense Projects (Sec. 5.1.6)	• Adequately supported
• Advanced battle damage assessment capability	• **New Programs*** - Tactical UGS, Tactical FLIR, and Weapon-borne BDA sensor • **Prior Programs** - See Intelligence Annex	• Adequately supported
• Survivability of tactical information assets in WMD environment		• Tactical system survivability

* See also the Intelligence Annex

5.1.4 Counterforce Programs

5.1.4.1 Introduction. In the counterforce area, DoD is working to improve capabilities to defeat WMD threats before they can be used against U.S., allied and coalition forces and noncombatants. Service resources are being devoted to maintaining U.S. forces at the highest state of readiness to enable a quick and effective response in regional contingencies throughout the world, even in contingencies, like Desert Shield/Desert Storm, where WMD may be a real and credible threat. Resources are being specifically targeted on improving both battlefield surveillance and counterforce capabilities to find and destroy WMD forces and their supporting infrastructure elements while minimizing collateral effects. Emphasis is being placed on defeating mobile targets, particularly WMD-armed mobile missiles, and hardened underground WMD facilities. Projects involving special weapons for WMD target defeat while minimizing collateral effects are underway as are programs to better understand WMD target vulnerabilities/response and collateral effects phenomenology.

5.1.4.2 New DoD Counterforce Initiatives

Counterproliferation Support Program Projects. The Counterproliferation Support Program is supporting several projects in this area, including: 1) developing sensors for target identification and collateral effects monitoring (including the Tactical UGS described in Section 5.1.3 above); 2) improving the understanding of collateral effects release phenomenology and transport; 3) improving the state of knowledge in weapons effects and target vulnerability/ response; 4) developing advanced penetrating weapons for hard underground target defeat; 5)

developing advanced warheads/payloads for enhanced lethality and functional kill against hard underground targets; 6) developing biological and chemical agent neutralization weapons; 7) developing the interferometric terrain-aided guidance (ITAG) advanced all-weather, precision accuracy, anti-jam weapon guidance package designed to be compatible with existing munitions; 8) developing the Munitions Effectiveness Analysis (MEA) and targeting tool to assist in targeting, weaponeering, and strike planning against WMD targets; 9) the Proliferation Path Assessment and Targeting System (PPATS) to assist in identifying critical steps in the proliferation process and aid in target identification; 10) tunnel defeat concepts, target response, and vulnerability assessment; and 11) integrated operational testing, including a candidate ACTD, to support the rapid fielding of these new capabilities. The DOE National Laboratories are also providing technology R&D technical support to these projects, including the ITAG system and enhanced weapon payloads. These projects are further summarized in Tables 5.7 and 5.8 and Appendix C (Table C.1).

5.1.4.3 Programs Ongoing Prior to the 1994 NPRC Report in Counterforce

ARPA's Warbreaker Program. The Warbreaker or Critical Mobile Targets project is focusing on Distributed Interactive Simulation to support R&D activities associated with sensor systems, communication sites, and information processing systems to detect, identify and prosecute high value, time-critical fixed and mobile targets such as theater ballistic missiles, tanks, and artillery. This program is further described in Appendix C (Table C.7), which also includes its FY 1996 budget profile.

DNA's Weapons System Lethality Program. This project develops lethality criteria for a full spectrum of weapons, including precision guided munitions and advanced conventional and unconventional payloads. The target base includes hard and superhard underground facilities, fixed surface facilities, and sea-based structures. This program is further described in Appendix C (Table C.8), which also includes its FY 1996 budget profile.

Table 5.7: Key DoD Counterproliferation Programs in WMD Counterforce

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Collateral Effects Phenomenology Assessment	- Source term characterization and transport prediction; phenomenology experiments; assessment tools	C	DNA	8.915	603160D
- Advanced Weapons Systems: (unitary penetrator, weaponization of advanced payloads, and ITAG system)	- Development of an enhanced penetrating munition for underground target defeat; expanded compatibility with delivery platforms; all-weather, anti-jam precision guidance capability	C	DNA Air Force	14.300	603160D
- Enhanced Weapon Payloads for Underground Target Defeat	- Development of a high temperature incendiary weapon payload and a classified payload	C	DNA	3.448	603160D
- BW/CW Agent Neutralization Weapons	- Development of prototype BW/CW agent defeat munitions	C	DNA Air Force	3.981	603160D
- WMD Target Response, Vulnerability Assessment, and Targeting	- Experimental and analytical analyses of WMD target response/vulnerability and automated target planning for WMD targets/proliferation path assessment (PPATS)	B/C	DNA	9.182	603160D
- Tunnel Defeat	- Assessment of tunnel response and vulnerability	C	DNA	9.952	602160D
- Counterproliferation ACTD	- Integrated operational testing to support early deployment of new capabilities	B/C	DNA	2.786	603160D
• **Prior CP-Related Programs** - Warbreaker Program	- Simulation and R&D support to develop concepts to find and destroy mobile targets	P	ARPA	135.103	603226E
- Weapons System Lethality	- Lethality evaluations of weapons against fixed and buried targets	C	DNA	46.165	602715H

* Refer to Table 2.1

5.1.4.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.8 illustrates how the counterforce programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.8: DoD Programs Addressing Shortfalls in WMD Counterforce Capabilities

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented	Status of Shortfalls
• Prompt Target Kill - Real-time intelligence and targeting information for warfighters - Pre-launch engagement of mobile missiles	• **New Programs** - Tactical UGS • **Prior Programs** - ARPA Warbreaker Program	• Operational capability for pre-launch engagement of mobile missiles
• Affordable standoff attack	• **New Programs** - ITAG system	• Adequately supported
• Capability to provide air and sea lift under threat of WMD-bearing delivery systems		• Capability to counter covertly delivered BW/CW threats • Ballistic and cruise missile defense
• Successful attack of very hard underground targets - Fine-grained intelligence to support target identification and characterization - Warhead lethality against such threats - Weapon fuze capability - Nonlethal disabling and isolation techniques - Suppression of enemy C3I	• **New Programs** - Advanced penetrating weapons - Enhanced weapon payloads - Weapon-borne sensors - Tactical UGS - Tunnel defeat assessments • **Prior Programs** - DNA Weapons Systems Lethality Program	• Adequately supported
• Limitation of collateral damage - Hazardous material dispersal - Safe chemical/biological agent defeat	• **New Programs** - Collateral effects phenomenology assessment - BW/CW agent neutralization weapons	• Adequately supported
• Target planning and prediction capability - WMD proliferation path assessment - Collateral effects prediction - Weapon effects - Target Characterization - Real-time, accurate battle damage assessment - Deployable C3I	• **New Programs** - MEA Targeting Tool - WMD target response/vulnerability assessment - Collateral effects phenomenology assessment - Tactical UGS - Tactical FLIR - Weapon-borne BDA sensor - Proliferation Path Assessment and Targeting System • **Prior Programs** - ARPA Warbreaker Program	• Adequately supported
• Support Special Operations Forces/FBI - Man-portable kill/disabling capability - WMD detection systems	• **New Programs** - Countering Paramilitary/Covert and Terrorist WMD Threats Projects (Sec. 5.1.7) • **Prior Programs** - Joint DoD Programs (Sec. 5.1.7)	• Capability to counter covertly delivered BW/CW threats • Pre-emplaced NBC response equipment

5.1.5 Active Defense Programs

5.1.5.1 Introduction. The role of active defense is to protect U.S., allied and coalition forces and noncombatants from WMD by intercepting and destroying WMD delivered by ballistic missiles, cruise missiles and aircraft. Active defense, particularly theater boost phase ballistic and cruise missile defense, continues to be a top DoD counterproliferation-related priority. To achieve active defense against missiles armed with WMD in a theater, DoD has developed a theater ballistic missile defense (TBMD) architecture that will entail deployment of multi-layered defenses. These layers consist of a Lower Tier (Patriot Advanced Capability - 3 (PAC-3), Navy area TBMD, and Corps Surface-to-Air Missile (SAM)/Medium Extended Air Defense System (MEADS)), an Upper Tier (Theater High Altitude Area Defense (THAAD) and Navy wide TBMD), and boost phase intercept. Effective boost phase defense, where intercept occurs over the launching country, may serve to minimize the impact of collateral effects on U.S. and friendly forces and civilian populations that may result from the intercept of WMD warheads. It also serves to reduce the effectiveness of various missile countermeasures. The technologies necessary to destroy enemy ballistic missiles during boost phase soon after launch are still being developed. Additional efforts are aimed at gaining a better understanding of the dispersion of BW/CW agents in flight and methods for neutralizing them to reduce collateral effects associated with ballistic and cruise missile engagements. Ongoing programs in the boost phase intercept area were deemed to be adequately supported by the NPRC in 1994. After this determination was made, Congress reduced the boost phase intercept budget requested by the President in FY 1995 by approximately $50 million. The current funding level of $40 million is not adequate to address the boost phase intercept problem fully. Several BMDO RDT&E programs are strongly related to counterproliferation. These programs are summarized below and in Tables 5.9 and 5.10 and in Appendix C.

5.1.5.2 New DoD Initiatives in Active Defense

Counterproliferation Support Program Projects. The Counterproliferation Support Program currently has no programs in the area of active defense.

Enhanced Program for Cruise Missile Defense. This initiative supplements ARPA's Air Defense Initiative described below. This program will provide additional sensor platforms and fire control capabilities to accelerate the overall program. This project is further described in Appendix C (Table C.7), which includes its FY 1996 budget profile. (See also Section 4.1.5.)

5.1.5.3 Programs Ongoing Prior to the 1994 NPRC Report in Counterproliferation

BMDO Programs. BMDO is currently conducting several TMD programs that are strongly related to counterproliferation, including: 1) boost phase intercept Demonstration/ Validation (DEMVAL); 2) DEMVAL and Engineering Manufacturing Development (EMD) activities for various TMD concepts, including Patriot PAC-3, THAAD, the Navy Upper and Lower Tier systems, and Corps SAM/MEADS; 3) advanced sensor technology and innovative science and technology RDT&E programs for post-2000 defense systems; 4) threat and countermeasures projects that define adversary military systems to ensure a defense system robust

to enemy capabilities and countermeasures; and 5) assessment, modeling and experimental activities involving collateral effects release associated with shooting down cruise and ballistic missiles armed with WMD and in attacking WMD-armed ballistic missile launchers. These projects are further described in Appendix C (Table C.6), which also includes their FY 1996 budget profiles.

ARPA Air Defense Initiative. In its Air Defense Initiative, ARPA is developing the Mountain Top radar for use against manned aircraft, cruise missiles, and theater ballistic missiles. BMDO and the Navy are also providing funding support in FY 1996 for the Mountain Top ACTD. This project is further described in Appendix C (Table C.7), which also includes its FY 1996 budget profile.

Air Force Programs. The Air Force is managing three programs in this area: 1) the Theater Missile Defense program reflects Air Force participation in Joint Boost Phase Intercept technology development with BMDO; 2) the Airborne Laser Technology program will demonstrate all necessary technologies for acquiring, tracking and destroying Theater Ballistic Missiles in the boost phase; and 3) the Space Sensor and Satellite Communication Technology program focuses on technologies to support Theater Missile Defense. These projects are further described in Appendix C (Table C.5), which also includes their FY 1996 budget profiles.

Table 5.9: Key DoD Counterproliferation Programs in Active Defense

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Enhanced Program for Cruise Missile Defense**	- Supplement ongoing cruise missile defense program by providing additional sensor platforms and fire control capabilities	L	ARPA	57.000	603226E
• **Prior CP-Related Programs** - BMDO Programs	- Systems and technologies to intercept theater ballistic missiles in flight - Advanced sensor technology RDT&E - Threat and countermeasures project	-	BMDO	2,442.2	Various**
- Theater Missile Defense	- Reflects Air Force participation in joint Boost Phase Intercept technology development with BMDO - Detection, location, and kill of critical mobile targets	O/P	Air Force	25.102	208060F
- Airborne Laser Technology	- Demonstrates all necessary technologies required for acquiring, tracking, and destroying Theater ballistic Missiles in the boost phase. Adjunct studies of cruise missile defense, BM/C4I, and surveillance	O	Air Force	20.000	603319F
- Space Sensor and Satellite Communication Technology	- Technology to support TMD	L	Air Force	3.700	603401F
- Air Defense Initiative	- Development of Mountain Top radar for defense against manned aircraft, cruise missiles, and theater ballistic missiles	L/O	ARPA	45.600	603226E

* Refer to Table 2.1
** See Appendix C (Table C.6).

5.1.5.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.10 illustrates how the active defense programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.10: DoD Programs Addressing Shortfalls in Active Defense Capabilities

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented	Status of Shortfalls
• Safe kill of WMD targets	• **Prior Programs** - BMDO Programs	• Limitation of collateral damage
• Assured warhead lethality against such threats	• **Prior Programs** - BMDO Programs	• Adequately supported
• Capability to counter likely ballistic missile countermeasures	• **Prior Programs** - BMDO Programs - Air Force Programs	• Adequately supported
• Detection and intercept of stealthy/covert systems	• **New Programs** - Enhanced Program for Cruise Missile Defense • **Prior Programs** - ARPA Program - Air Force Programs	• Sensors and related platforms
• Intercept capability in boost phase	• **Prior Programs** - BMDO Programs - Air Force Programs	• Sensors, related platforms and interceptors
• Assured rapid access to regions in crisis or conflict	• **Prior Programs** - BMDO Programs	• Adequately supported
• Protection of military and civilian targets	• **Prior Programs** - BMDO Programs	• Adequately supported
• Wide area/regional defenses	• **Prior Programs** - BMDO Programs	• Adequately supported

5.1.6 Passive Defense Programs

5.1.6.1 Introduction. DoD supports an extensive NBC passive defense infrastructure the primary purpose of which is defending troops against the possible use of WMD on the battlefield. As part of DoD's prior commitment to addressing this problem, it currently funds R&D for devices that detect and characterize BW/CW agents, programs that improve individual and collective protection, and methods to advance the speed and efficiency of NBC decontamination. In addition to these efforts DoD is continuing to investigate ways to increase its production of BW vaccines while at the same time researching new vaccines and therapeutic treatments. The consolidated CBD Program discussed in Section 4.1.2 supervises and focuses DoD efforts in passive defense. As a counterpart to this activity, the Counterproliferation Support Program leverages existing programs to accelerate the fielding of critical systems and technologies.

5.1.6.2 New DoD Initiatives in Passive Defense

Counterproliferation Support Program Projects. The Counterproliferation Support Program is supporting projects to: 1) accelerate - by up to 6 years - the fielding of an advanced eye safe infrared (IR) Lidar to provide long range battlefield warning of CW/BW use; 2) explore whether UV multifrequency lasers can be employed to detect and characterize BW agents by their florescent spectra; 3) develop miniaturized BW/CW point detectors with increased sensitivity that are amenable to installation on unmanned aerial vehicles (UAVs); 4) accelerate deployment - by two years - of individual protective clothing and collective protection equipment; 5) supplement the CBD decontamination technology base; and 6) enhance existing joint NBC doctrine and training procedures by intensified battlefield simulation.

The DOE National Laboratories participate in passive defense research under the sponsorship of the Counterproliferation Support Program. Their principal contributions have been in developing and improving upon the IR Lidar and constructing the research plan for the UV laser program. Tables 5.11 and 5.12 and Appendix C (Table C.1) summarize these efforts.

DoD BW Vaccine Acquisition Program. The 1994 NPRC report highlighted a military need for a new facility to produce vaccines at a pace rapid enough to match any anticipated battlefield demand. In the past year an RFP has been prepared and is expected to be released shortly to select a prime contractor to meet DoD BW vaccine production needs. This program is being worked as part of DoD's FY 1997 POM budgeting process.

5.1.6.3 Programs Ongoing Prior to the 1994 NPRC Report in Passive Defense

The Chemical/Biological Defense Program. All RDT&E projects within the consolidated CBD Program are structured within the six Program Elements (PE) for: Basic Research, Exploratory Development, Advanced Development, Demonstration/Validation (DEMVAL), Engineering/Manufacturing Development, and RDT&E Management Support. Highlights of key programs strongly related to counterproliferation within each of these programs elements are described below. FY 1996 budget profiles for the CBD Program (by PE number) are provided in Appendix C (Table C.2).

CBD Basic Research. This effort provides basic research in the chemistry, physics and life sciences in support of: new and improved defensive systems for BW/CW agents and toxins; new concepts in decontamination; basic studies for initial design and synthesis of medical countermeasures; and development of vaccines and drugs for medical defense against BW agents.

CBD Exploratory Development. Exploratory development projects are conducted by all Services to address the urgent need to protect forces from NBC threats. Work is underway in: NBC detection, identification and warning; contamination avoidance through reconnaissance; individual and collective protection and decontamination; vaccine and drug development to provide an effective medical defense against validated BW/CW threats; and development of prophylaxes, pretreatments, antidotes, decontaminants, and therapeutic compounds.

CBD Advanced Development. This activity supports research in pre-clinical development of vaccines and drugs for exposure to BW agents; development of kits to rapidly diagnose BW exposure; evaluation of technologies involved in the targeting and delivery of prophylaxis and therapeutic medical countermeasures; investigation of new medical countermeasures to protect against CW agents; and analytical stability studies, safety and efficacy screening, and pre-clinical toxicology studies to support full scale development of pretreatment and treatment compounds. Work is also funded to support an Integrated Biodetection Advanced Technology Demonstration (ATD) that will fabricate, demonstrate, and integrate advanced point and standoff biodetection technologies.

CBD DEMVAL. Projects provide for the development and demonstration testing of both medical and nonmedical chemical and biological defense equipment across all Services, including: individual and collective protection equipment such as the Advanced Integrated Collective Protection System (AICPS), the Joint Service Lightweight Integrated Suit Technology (JSLIST) for individual protection, and Naval shipboard collective protection; an array of BW/CW detection and warning systems to include the Fox NBC Reconnaissance System (NBCRS), the Lightweight Standoff Chemical Agent Detector (LSCAD), the next generation Chemical Biological Mass Spectrometer (CBMS), and the HAZWARN chemical reporting system; and the Modular Decontamination System (MDS) and sorbent decontamination technology and equipment to replace current logistically burdensome and time consuming decontamination methods. In the medical chemical defense area, work is ongoing to develop improved medical equipment and drugs essential to counteracting lethal and human performance degrading effects of CW threats, including improvements to nerve agent antidotes, topical skin protectants, and anticonvulsants.

CBD EMD. Projects provide for development and demonstration testing of NBC defense equipment both medical and nonmedical across all Services, including: individual and collective protection equipment such as the XM45 Aircrew Protective Mask (ACPM), JSLIST, Naval shipboard collective protection, a Disposable Eye/Respiratory Protection (DERP) system and a respirator system for pilots; radiological detection and monitoring equipment; an array of BW/CW detection and warning systems to include the Multi-Purpose Integrated Chemical Agent Detector (MICAD), the XM22 Automatic Chemical Agent Alarm (ACADA), the CBMS, the Naval shipboard Improved Chemical Agent Point Detector System (IPDS), the Chemical Agent Remote Detector System (CARDS), the In-Line Water Chemical Biological Detector, the Aircraft Interior Detector, the Shipboard Chemical Agent Monitor (SCAMP), and the XM93E1 Fox NBCRS; and decontamination solutions and equipment. In the medical chemical/biological defense area projects are ongoing to develop improved medical equipment and drugs to counteract lethal and human performance degrading effects of CW threats and to develop BW defense protective vaccines and mechanisms for clinical identification of BW agents through medical evaluation and laboratory analysis.

CBD Management Support. The primary program supported within this element is the Joint Chemical/Biological Contact Point and Test Program which provides input to the Services for development of doctrine, policy, training procedures, and feedback into the RDT&E cycle. The work evaluates and reports on joint tests (for other than development hardware) and

accomplishes operational research assessments in response to requirements received from the Services.

JPO-BD Biological Defense Acquisition Programs. The JPO-BD was established to provide centralized management of the Services' Biological Defense acquisition programs. Projects managed by the JPO-BD are contained within the EMD program and involve the development of point and standoff BW agent detection systems. Two key projects are the Biological Integrated Detection System (BIDS), which integrates a full BW agent detection and identification system into a single High Mobility Multi-Purpose Wheeled Vehicle (HMMWV or "Hum Vee") shelter, and the Long Range Biological Standoff Detection System (LR-BSDS), a first generation airborne IR Lidar for BW/CW aerosol detection.

CBD Program FY 1996 Procurement Plans. Procurement plans include activities in NBC contamination avoidance that initiate procurement of the Improved Chemical Agent Monitor (ICAM), the pocket Radiac system, the Improved Chemical Agent Detector, the Improved Point Detection System for shipboard use, and the Fox NBCRS Block I modification; continues procurement of the Automatic Vapor Agent Detector for mustard detection; and completes procurement of the M21 Remote Sensing Chemical Agent Alarm (RSCAAL). Activities in the area of NBC protection systems include initial procurement of the JSLIST I protective ensembles; continued procurement of the Chemical/Biological Protection System and the Protection Assessment Test System (PATS); and completion of the procurement of the Aircrew Eye/Respiratory Protection System. Procurement is also being completed for the M17 Lightweight Decontamination System Modifications, the BIDS nondevelopmental item (NDI) system, and the LR-BSDS airborne IR Lidar.

DNA Programs. DNA has two programs to ensure the survivability of weapons systems in a nuclear environment: 1) Test and Simulation Technology, which provides simulators and simulator technology to validate weapons systems operability in nuclear environments; and 2) Weapons Safety and Operational Support, which provides force survivability assessments against nuclear weapons. Additional details for these programs are provided in Appendix C (Table C.8), which also includes their FY 1996 budget profiles.

Service Programs. There are several Service passive defense programs which are not incorporated into the CBD Program. The Navy's Radiological Controls program provides RDT&E of radiation monitoring equipment for Navy and Marine Corps use. The Army's programs include the operation of Dugway Proving Ground, Utah, as the primary test range for chemical and biological defense equipment, and the Nuclear Effects Survivability program, which develops technology to enhance the survivability of Army systems in nuclear environments. Additional details for these programs are provided in Appendix C (Tables C.3 and C.4), which also includes their FY 1996 budget profiles.

Table 5.11: Key DoD Counterproliferation Programs in Passive Defense

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Long Range Eye Safe IR Lidar	- Accelerated deployment (up to 6 yrs) of full Army complement of airborne eye-safe IR Lidars for battlefield BW/CW agent aerosol detection and track	A	JPO-BD Army/ CBDCOM	12.800	604384BP
- UV Lidar for BW Identification	- Enhanced RDT&E of UV Lidar technology for standoff BW identification	A	Army/ CBDCOM	4.000	602384BP
- Miniaturized BW Agent Detectors	- Enhanced RDT&E for selected BW agent detector technologies, including UAV integration for standoff BW characterization	A	ARPA NRL USMC	3.300	602384BP
- CW Agent Surface Acoustic Wave Detector	- Enhanced development and rapid prototyping of CW agent detectors for a variety of applications	A	ARPA NRL	2.400	602384BP
- JSLIST Individual Protection Gear	- Accelerated deployment (by 2 yrs) of this advanced technology lightweight NBC protection suit	J	USMC	3.600	604384BP
- Advanced Integrated Collective Protection System	- Accelerated deployment (by 1 yr) of this unique air filtration, conditioning and integrated power system	J	Army/ CBDCOM	2.400	604384BP
- BW/CW Decontamination Tech Base	- Enhanced RDT&E leading to advanced development of a selected technology in FY97	J	Army/ CBDCOM	2.000	602384BP
- Joint NBC Simulation and Training	- Development of enhanced simulation and training capabilities.	J	Army/ CBDCOM CMLS	2.000	605384BP
- Joint NBC Operational Planning and Doctrine	- Development of tactics, techniques and procedures to facilitate Joint NBC operations	J	Army/ CMLS NDU	1.200	605384BP
• **BW Vaccine Acquisition Program**	- RFP in process to select a prime contractor to meet DoD BW vaccine production needs	K	JPO-BD	TBD	TBD
• **Prior CP-Related Programs** - CBD Program	- RDT&E and procurement of systems and equipment for NBC agent detection and warning, individual and collective protection, medical response, and decontamination	A/J	JPO-BD Services	350.000	Various**
- Army Programs	- Testing facilities and nuclear survivability R&D	J	Army	14.149	Various**
- Navy Radiological Controls	- RDT&E of radiation monitoring equipment	J	Navy	3.202	603542N
- Test and Simulation Technology	- Simulators and simulator technology to validate weapon systems operability in a nuclear environment	J	DNA	69.588	602715H
- Weapons Safety and Operational Support	- Force survivability assessments against nuclear weapons; counterproliferation training	J	DNA	25.947	602715H

* Refer to Table 2.1
** See Appendix C

5.1.6.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.12 illustrates how the passive defense programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Programs addressing these shortfalls are adequately supported, and there are currently no remaining shortfalls identified in this area.

Table 5.12: DoD Programs Addressing Shortfalls in Passive Defense Capabilities

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented	Status of Shortfalls
• Stand-off detection and discrimination of BW/CW agents and nuclear radiation	• **New Programs** - Long Range IR Lidar - UV Lidar for BW identification - Miniaturized BW/CW detectors for UAVs and other applications • **Prior Programs** - CBD Program	• Adequately supported
• Passive defense capabilities enabling military operations to continue in contaminated conditions - actual or threatened (low cost, lightweight) - Individual/collective protection for personnel and equipment - Vaccines and antibiotics for protection/ mitigation of effects - Advanced hazard dispersal and effects prediction capability - System survivability to operate in and through NBC environments	• **New Programs** - JSLIST individual protective gear - AICPS - Joint NBC simulation and training - Joint NBC operational planning and doctrine development - BW Vaccine Acquisition Program • **Prior Programs** - CBD Program - DNA survivability programs - Navy Radiological Controls - Army testing and survivability programs	• Joint NBC doctrine development and implementation
• Large-scale/rapid decontamination techniques	• **New Programs** - BW/CW decontamination tech. base • **Prior Programs** - CBD Program	• Adequately supported

5.1.7 Programs to Counter Paramilitary/Covert and Terrorist WMD Threats

5.1.7.1 Introduction. The DoD is actively pursuing several activities to counter paramilitary, covert delivery, and terrorist WMD threats and protect military facilities and logistical/mobilization nodes against these threats. These efforts include supporting, training and equipping Joint Special Operations Forces (SOF), explosive ordnance disposal teams, and NBC weapon response teams to detect, neutralize and render safe WMD devices both in the U.S. and overseas.

5.1.7.2 New DoD Initiatives to Counter Paramilitary/Covert and Terrorist WMD Threats.

Counterproliferation Support Program Projects. The Counterproliferation Support Program is sponsoring projects designed to counter paramilitary/covert and terrorist WMD threats against military facilities and logistical/mobilization nodes. These efforts are focused on developing an effective response to chemical and biological threats. The goal is to develop a BW/CW emergency response team modeled on DOE's Nuclear Emergency Search Team (NEST). Projects underway include: evaluation of military facility WMD defense, developing

advanced enabling technologies and equipment to support Joint SOF and funding joint training exercises to improve the readiness of NBC response teams. The DOE National Laboratories are also contributing to these projects, including working with DNA's nuclear incident program (NIP) to improve military base and mobilization/logistical node defense against nuclear threats. These projects are further summarized in Tables 5.13 and 5.14 and Appendix C (Table C.1).

5.1.7.3 Programs Ongoing Prior to the 1994 NPRC Report to Counter Paramilitary/ Covert and Terrorist WMD Threats

Joint DoD Counter-Paramilitary/Covert WMD Threat Programs. DoD, through each of the Services and the Special Operations Command (USSOCOM), is devoting significant resources to developing the necessary technical means to counter WMD paramilitary, covert delivery, and terrorist threats. Much effort is underway in tactical intelligence related programs to assist SOF in conducting counterproliferation missions, such as the Joint DoD/INTELL TIARA Program. (See the Intelligence Annex for details.) Other programs include: development of special warfare and C3 equipment, airbase protection programs, NEST support activities, multi-Service Explosive Ordnance Disposal (EOD) Team and Technical Escort Unit (TEU) operations, and RDT&E of advanced technologies to support USSOCOM and EOD operations. These projects are further described in Appendix C (Table C.9), which also includes their FY 1996 budget profiles.

Navy Programs. The Navy's Joint Service Explosive Ordnance Disposal Systems program develops specialized EOD equipment and tools required for detection, locating, and rendering safe of NBC munitions. This project is further described in Appendix C, which also includes its FY 1996 budget profile (Table C.4).

Table 5.13: Key DoD Counterproliferation Programs in Countering Paramilitary/Covert and Terrorist WMD Threats

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **CP Support Program** - Evaluation of Military Facility WMD Defense	- Assessment of protecting military bases and mobilization/logistical nodes from paramilitary/ covert nuclear threats	E/I	DNA/ NIP	0.497	605160D
- Advanced Technology for Countering BW/CW Threats	- Development of technologies and prototypes to assist SOF in countering BW/CW threats	E/I	ASD (SO/LIC)	3.384	603160D
- Joint SOF WMD Readiness Exercises	- Conduct joint exercises to coordinate roles and lines of authority, develop operational requirements, evaluate new technologies, and identify necessary logistical support	E/I	Navy/ EOD	0.995	605160D
• **Prior CP-Related Programs** - Joint DoD Initiatives	- Development of technical capabilities and advanced systems and concepts to detect, render safe, and defend against paramilitary, covert delivery, and terrorist NBC threats both in the U.S. and overseas.	E/I	OSD	12.044	602222D
- Explosive Ordnance Disposal	- Equipment and tools to detect, locate, and render safe NBC munitions	E/I	Navy	4.803	603654N

* Refer to Table 2.1

5.1.7.4 Addressing the 1994 NPRC Identified Shortfalls. Table 5.14 illustrates how the programs for countering paramilitary/covert and terrorist WMD threats described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.14: DoD Programs Addressing Shortfalls in Countering Paramilitary/Covert and Terrorist WMD Threats

Shortfalls Identified by 1994 NPRC	Prior Programs and New Programs Implemented*	Status of Shortfalls*
• Capability to find WMD	• **New Programs** - Joint SOF WMD readiness exercises - Evaluation of military facility WMD defense • **Prior Programs** - Joint DoD Initiatives	• Capability to find covertly delivered BW/CW
• Capability to render WMD safe	• **New Programs** - Adv. technology for countering BW/CW threats - Joint SOF WMD readiness exercises - Evaluation of military facility WMD defense • **Prior Programs** - Joint DoD Initiatives - Explosives Ordnance Disposal	• Pre-emplaced equipment • Training and operations
• Enhance assault and personnel protective equipment	• **New Programs** - Adv. technology for countering BW/CW threats - Joint SOF WMD readiness exercises - Evaluation of military facility WMD defense • **Prior Programs** - Joint DoD Initiatives	• Adequately supported
• Enhance decontamination capabilities	• **New Programs** - BW/CW Decontamination Tech. Base Support (See Sec. 5.1.6) • **Prior Programs** - CBD Program (See Sec. 5.1.6)	• Modification of battlefield equipment and techniques to address paramilitary/covert and terrorist threats

* See also the Intelligence Annex to this report.

5.2 DOE Programs

5.2.1 Introduction. DOE's counterproliferation-related activities leverage nonproliferation and nuclear threat reduction mission activities and cover the spectrum from proliferation prevention to nuclear accident prevention and response. These activities include:

- Conducting proliferation-detection technology programs;
- Establishing nonproliferation-related analytical support programs at the DOE National Laboratories;
- Providing proliferation intelligence analyses to support DOE responsibilities and U.S. Intelligence nonproliferation efforts;
- Providing technical and policy support to international export control regimes and nonproliferation communities including the International Atomic Energy Agency (IAEA);
- Supporting regional nonproliferation activities and initiatives in the Middle East, Korean Peninsula, and South Asia;
- Supporting U.S. activities aimed at assisting states of the FSU in nuclear materials control, accounting and physical protection; emergency response; and export controls;
- Supporting U.S. and international efforts aimed at minimizing the use of highly enriched uranium in international fuel-cycle commerce;
- Providing technical support in the formulation and implementation of U.S. policy related to nuclear nonproliferation treaties, international safeguards and physical protection;
- Developing advanced technologies to enhance international safeguards and conducting bilateral and multilateral exchanges on international safeguards and physical protection;
- Operating and enhancing a proliferation information network system to support the evaluation of export application cases related to nuclear proliferation;
- Maintaining the Nuclear Materials Management and Safeguards Systems (NMMSS) to track U.S. and foreign nuclear materials pursuant to U.S. obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT); and
- Supporting post-proliferation assessments with regard to proliferant nuclear device design information.

5.2.2 New DOE Initiatives for Countering Proliferation. The FY 1996 DOE budget contains a requested increase of $70 million over the FY 1995 budget. This increase will enable DOE to continue the expansion of its nonproliferation and nuclear threat reduction activities and programs as identified in the Department's Strategic Plan. The increase in funding requested for FY 1996 is to develop and implement a program of Material Control and Accounting and Physical Protection of Russian nuclear materials by initiation of a Lab-to-Lab cooperative program utilizing the unique capabilities of the DOE National Laboratories. While no new funds are requested in FY 1996 within the DOE technology base, DOE has consolidated CTBT-related technology development into a single program area to streamline operations and maximize the effectiveness of requested funding. DOE has also developed an integrated program plan for nuclear smuggling attribution.

5.2.3 DOE Nonproliferation Programs Prior to the 1994 NPRC Report. The majority of DOE's activities related to countering proliferation are conducted under three large program areas: 1) Verification and Control Technology, 2) Nuclear Weapons R&D, and 3) Nuclear Safeguards and Security.

Verification and Control Technology. The objectives of this program are to support the development and implementation of U.S. national security and foreign policies on nonproliferation; provide intelligence analysis of the nuclear capabilities of foreign countries, their potential for nuclear proliferation, and possible support to nuclear terrorism; develop and execute a program of technology development to enhance U.S. and international proliferation detection capabilities; develop and implement DOE's nuclear nonproliferation policy; develop and implement policies, regulations, and procedures relating to DOE's international safeguards and physical protection activities; and develop and implement policies, regulations, and procedures governing the export of nuclear and nuclear-related equipment, materials, and technologies.

Weapons Activities Research and Development. Utilizing capabilities and facilities that already reside in existing weapons R&D programs and technical infrastructure, this program supports nonproliferation, post-proliferation assessment and response, arms control, and verification activities. Nonproliferation support activities include: assessments related to proliferant nuclear device design, assessments of events or conditions that can have military implications, including tritium monitoring support, and terrorist threat assessments.

Nuclear Safeguards and Security. The objectives of this program are to support international safeguards and reporting activities pursuant to U.S. obligations under the NPT, and to support international standardization and compatibility of nuclear material measurements on materials subject to inventory verification by the IAEA.

As reported in the 1994 NPRC report, DOE activities and their associated funding can be matched to the specific DoD functional areas for countering proliferation as described below.

Proliferation Prevention: Inspection Support Programs. DOE activities in the areas of MPC&A and international safeguards are two primary examples of activities strongly related to the DoD inspection support counterproliferation mission. However, DOE is involved in all U.S.

nuclear weapons and fissile material arms control and nonproliferation initiatives, both bilateral and multilateral, and their concomitant inspection regimes. Many of these inspection regimes involve DOE facilities, and thus require DOE involvement. Additionally, because of the long-standing role DOE and DOE National Laboratory staff have played in protecting U.S. nuclear materials and nuclear weapons and components, the Department through the Office on Arms Control and Nonproliferation provides technical support to the U.S. Government in this important non/counterproliferation area.

Proliferation Prevention: Nuclear Export Control Programs. DOE, through the Export Control Division within the Office of Arms Control and Nonproliferation, provides direct support to U.S. Government nuclear material and dual-use item export control activities. DOE staff are involved in export application case reviews and operating and enhancing a proliferation information network system to support these evaluations. Specific international export control regimes which are supported include the NPT Exporters Committee, the COCOM Successor Regime, the Chemical Weapons Convention, and others.

Strategic and Tactical Intelligence Programs. DOE activities strongly supportive of DoD counterproliferation intelligence activities are reported in the Intelligence Annex to this report. These activities are undertaken under the auspices of the DOE Office of Intelligence, NN-30, within the Office of Nonproliferation and National Security.

Passive Defense Programs. Activities funded as part of DOE nuclear weapons research and development are associated with the DoD counterproliferation passive defense effort. These activities are funded through the Department's Assistant Secretary for Defense Programs at the levels shown in Appendix D. They included technical assessments related to proliferant nuclear device design and assessments of events or conditions of potential military significance necessary to support threat assessments and treaty implementations.

Programs to Counter Paramilitary/Covert and Terrorist Nuclear Threats. Long-standing NEST activities within DOE Defense Programs are strongly related and support U.S. Government and DoD counterterrorism efforts. NEST is a DOE Defense Programs funded activity that provides operational and technical support for resolution of incidents or accidents involving nuclear materials anywhere in the world under the auspices of the lead federal agencies (FBI for threats within the U.S. and the State Department for overseas threats). This national resource of skilled personnel and equipment, which can be called upon as needed, is built on the capabilities an expertise acquired through designing, building, and maintaining the U.S. nuclear weapons stockpile. These resources are the most effective national assets to locate, identify , assess, and disable nuclear weapons and devices. These include improvised nuclear devices with the potential of attaining nuclear yield, as well as radiological dispersal device which may be used to spread radioactive contamination into the environment.

Technology Base R&D. The R&D activities of DOE's Office of Nonproliferation and National Security provide a technology base which benefits DoD's counterproliferation activities. These activities are organized by their application and include: on-site systems, regional monitoring systems, remote sensing systems, and advanced systems. Each application area is

described below, and the associated funding information provided in Appendix D is indicative of that portion of the DOE Verification and Control Technology R&D budget that is strongly related to counterproliferation.

On-Site Systems. These activities focus on the development and demonstration of prototype detection technologies and analytical methods to support on a timely basis both current and future U.S. Government nonproliferation and arms control policies and initiatives. The program focuses on cooperative transparency and confidence building measures that utilize both portable and unattended instrumentation. Technologies include: 1) new radiation detection concepts such as man-portable high-resolution gamma-ray spectrometers and hand-held mass and optical spectrometers and field instruments for detecting uranium and plutonium isotopes; 2) warhead dismantlement, transparency and special nuclear materials (SNM) accountability technologies for detection, measurement, and analytical techniques to validate the status and disposition of nuclear weapons and fissile materials and verify the accountability and chain of custody of SNM; 3) underground structure detection technologies which include sensors and analytical techniques to detect and characterize subsurface targets (including tunnels) in a nonintrusive manner; 4) cooperative monitoring technologies including UGS and hand-held mass spectrometers, particulate and gaseous sampling systems, and intelligence sensors to exploit specific signatures; 5) the Airborne Multisensor Pod System (AMPS) for multisensor data collection to test and evaluate data fusion concepts.

Regional Monitoring Systems. Regional monitoring activities focus on technology development in support of the detection, location, and characterization of nuclear proliferation in two thrust areas: 1) effluent detection and analysis technology to find and analyze chemical signatures indicative of nuclear weapons proliferation and production; and 2) CTBT R&D focusing on technologies to assist in the detection, localization, and characterization of subsurface nuclear explosions.

Remote Sensing Systems. Remote sensing activities develop special sensors for deployment on satellite platforms for nuclear explosion detection and proliferation detection. Specific activities include: 1) developing new satellite sensor and materials technologies and evaluating advanced sensor concepts and automated tools for design definition and instrument fabrication; 2) producing operational nuclear explosion detection payloads meeting national treaty monitoring/verification and strategic battle management requirements for detecting nuclear explosions in the atmosphere and in near earth space; and 3) demonstrating new technologies and capabilities applicable to detecting nuclear proliferation activities prior to device detonations, as well as remote detection of other clandestine activities having military significance. The program is coordinated with the Air Force, National Aeronautics and Space Administration (NASA), and the National Reconnaissance Office (NRO). Sensors and systems deployed for these purposes will be of fundamental importance to the monitoring of a worldwide comprehensive nuclear test ban. Operational systems currently provide continuous worldwide surveillance from the Global Positioning System (GPS) satellite constellation and from other military platforms. Ninety-nine satellite and space probe payloads have been launched during the 35 years of this program.

Advanced Systems. These programs are structured to encourage new and innovative thinking on technological solutions to proliferation detection and treaty verification capabilities. In addition to numerous individual small exploratory efforts devoted to exploring high risk, high payoff technologies, two major programs are supported: 1) the Chemical Analysis by Laser Interrogation Of Proliferation Effluents (CALIOPE) project with an objective to provide unparalleled standoff proliferation detection by remotely detecting and monitoring chemical effluents; and 2) multisensor systems research to develop advanced computer methods and systems, like the Deployable Adaptive Event Recognition and Processing System, for converting massive amounts of data to usable information in a timely manner through data fusion techniques involving neural networks, expert systems, target recognition algorithms, feature extraction algorithms, and maximum likelihood estimators. The CALIOPE program is being coordinated across the U.S. Government by the Nonproliferation and Arms Control Technology Working Group.

5.2.4 Programs to be Developed to IOC. Except for the specific portions of the Satellite Nuclear Detonation Detection (NUDET) activities, none of the DOE-developed technologies described above are taken to IOC. Instead, for activities which are technology R&D, the end-product is a system or method capability demonstration most commonly in the form of a field-capable prototype in direct response to requirements identified by the using agency. It is at this stage in the R&D life cycle that the Department program managers encourage and participate in the transfer of the R&D product to the user community for field hardening, engineering refinements, and production.

DOE currently produces satellite-borne sensors for the national capability to monitor and verify compliance with the Limited Test Ban Treaty (LTBT). These sensors are secondary payloads on the GPS and Defense Support Program satellites. DOE is developing the next generation of national capability of improved optical, x-ray, and space-environmental sensors to provide a better capability to monitor the continuation of the LTBT and to enable the U.S. to monitor and verify the CTBT. The sensor systems under development are planned to go from development through IOC to production to meet required delivery dates for the next generation of GPS satellites.

5.2.5 Addressing the 1994 NPRC Identified Shortfalls. Table 5.15 illustrates how the DOE programs described above address the shortfalls in counterproliferation capabilities identified by the 1994 NPRC. Shortfalls remaining to be addressed are highlighted.

Table 5.15: DOE Programs Addressing Shortfalls in Strategic and Tactical Intelligence and Proliferation Prevention Capabilities

Shortfalls Identified by 1994 NPRC	Programs and Initiatives Implemented	Status of Shortfalls
<u>Intelligence</u> • Reliable methodology for detecting WMD programs early in their development including motivations, plans and intentions of policy makers	• **Prior Programs** - INTELL support in developing estimates of potential nuclear weapons states - Proliferation intelligence analyses - Nonproliferation-related analytical support	• See Intelligence Annex
• Effective methods to understand and counter diverse concealment, denial and deception practices--particularly the identification and characterization of underground facilities and dual use facilities	• **Prior Programs** - Proliferation detection technology - Nonproliferation-related analytical support	• See Intelligence Annex
• Nonoptimal exploitation of collected information because of lack of intelligence community connectivity and effective processing and analytical tools	• **Prior Programs** - INTELL support in developing estimates of potential nuclear weapons states - Nonproliferation-related analytical support	• See Intelligence Annex
• Ability to locate and identify NBC weapons activity	• **Prior Programs** - Proliferation detection technology - Post-proliferation assessments of proliferant nuclear device design	• See Intelligence Annex
• Identification and characterization of technology transfer networks supporting the development of WMD	• **Nuclear Smuggling Prevention Program** • **Prior Programs** - Maintaining the NMMSS to track nuclear material under the NPT	• See Intelligence Annex
<u>Inspection Support</u> • Capability to monitor and detect suspect activities using cooperative and noncooperative means	• **CTBT R&D Program** • **Prior Programs** - IAEA safeguards program support - Proliferation detection technology - Technical and policy support to international export control regimes including the IAEA	• Regional characterization • Detection and location of WMD
• Safe destruction of treaty limited items	• **Prior Programs** - Assisting FSU in nuclear materials control, accounting, physical protection, emergency response and export controls	• Coverage of additional facilities
• Facility inspection for material detection, analysis and transport/ safeguard	• **MPC&A Program** • **Prior Programs** - IAEA safeguards program support - Nonproliferation/verification technology R&D - Technical and policy support to international export control regimes including the IAEA - Technical support for nuclear nonproliferation treaties, international safeguards and physical protection - Advanced technologies and multilateral exchanges to enhance international safeguards	• Adequately supported • Detection and location of WMD

Shortfalls Identified by 1994 NPRC	Programs and Initiatives Implemented	Status of Shortfalls
• Remote monitoring capability	• **CTBT R&D Program** • **Prior Programs** - Proliferation detection technology	• Regional characterization • Detection and location of WMD
Support for Export Control Programs • Automated capability to identify proliferation paths and activities	• **Prior Programs** - INTELL support in developing estimates of activities of potential nuclear weapons states - Nonproliferation-related analytical support - Post-proliferation assessments of proliferant nuclear device design	• Adequately supported
• Country-specific data to include technical paths for WMD development and supply relationships	• **Prior Programs** - INTELL support in developing estimates of activities of potential nuclear weapons states - Supporting regional nonproliferation activities - Post-proliferation assessments of proliferant nuclear device design	• Adequately supported
• Identification and tracking of critical materials and items	• **MPC&A Program** • **Nuclear Smuggling Prevention Program** • **Prior Initiatives** - Operating a nuclear proliferation information network system for evaluation of export application cases - Maintaining the NMMSS to track nuclear material under the NPT - Efforts to minimize use of highly enriched uranium in international fuel cycle commerce; preventing a nuclear material black market	• Adequately supported

5.3 U.S. Intelligence Programs

5.3.1 Introduction. Few issues today have more serious and far-reaching implications for security and stability than the worldwide proliferation of WMD and their delivery systems. The problem is global -- geographically, technologically, and politically. It involves some of the largest and smallest, richest and poorest countries which include some of the most reactionary and unstable regimes. At least 20 countries already have or may be developing WMD and ballistic missile delivery systems. Some of these countries are also re-exporting their newly-developed technologies or equipment to other nations. Worsening economic conditions and the lure of lucrative foreign sales are encouraging other states or firms to engage in WMD-related technology transfers. Of particular concern is the potential for smuggling of nuclear weapons or nuclear-related material from the FSU.

Many of the technologies associated with WMD programs have legitimate civilian or military applications unrelated to WMD. This paradox makes it difficult to restrict trade in those technologies because developing nations have legitimate needs for them. For example, chemicals used to make nerve agents are also used to make plastics and to process foodstuffs. A modern pharmaceutical industry could produce biological warfare agents as easily as vaccines and antibiotics, and much of the technology needed for a ballistic missile program is the same as that needed for a space launch vehicle program. As the economies of potential proliferating countries improve and their industrial bases mature, however, their dependence on foreign technologies necessary for WMD will be reduced, making early detection and interdiction of new programs increasingly difficult.

The mission of U.S. Intelligence is to assist those who make and execute U.S. policy in stemming proliferation to countries of concern by:

- Providing accurate, comprehensive, timely, and actionable foreign intelligence; and

- Searching for new ways and opportunities in intelligence activities to add substantial value to policy decisions related to the four aspects of U.S. national strategy: preventing acquisitions, capping or rolling back existing capabilities, deterring weapons use, and adapting U.S. military forces to respond to threats.

Ensuring that U.S. Intelligence support addresses all four aspects of the U.S. national strategy is essential. The Presidential Decision Directive on Nonproliferation and Export Controls identified ten major national actions and addressed all four aspects of the U.S. strategy for countering proliferation. These objectives are summarized in Figure 5.2.

5.3.2 Intelligence Activities to Counter Proliferation. U.S. Intelligence has instituted and continues to implement a corporate strategic planning and evaluation process to serve as an integral part of the ongoing effort to establish a balanced intelligence effort to counter proliferation. This process supports and complements the DCI's new National Needs Process and the NFIP, JMIP and TIARA Program and Planning Guidance issued by the DCI and the Deputy

Figure 5.2 National Objectives for Countering Proliferation

Secretary of Defense. A major benefit of this effort has been the establishment of significant DoD representation within the DCI's Nonproliferation Center (NPC) for the integration of U.S. Intelligence to support DoD counterproliferation needs and actions. Figure 5.3 summarizes factors that assist in determining program and resource balance for counterproliferation-related intelligence activities.

The scope and magnitude of the proliferation problem requires the involvement and application of significant NFIP, JMIP and TIARA resources to support national counterproliferation objectives. The NFIP, TIARA, and JMIP programs all support the strategic and tactical intelligence counterproliferation functional area. NFIP provides strategic intelligence products which support military force deployments. TIARA intelligence products include tactical surveillance and reconnaissance support to deployed military forces. In wartime, TIARA assets are typically deployed with the fielded operational military units. JMIP is a new intelligence program designed to support U.S. military forces in a wide range of contingencies. It includes a mix of strategic and tactical intelligence assets and products and is organized to meet the specific intelligence needs of military commanders in a timely fashion. The NFIP, TIARA and JMIP programs are described in more detail in the Intelligence Annex .

As proliferation incidents continue to increase and occur on a more frequent basis, Presidential direction and Congressional language have increasingly emphasized the need to address this issue as a top national priority. The scope and magnitude of the proliferation problem requires the involvement and application of significant NFIP, JMIP and TIARA resources to

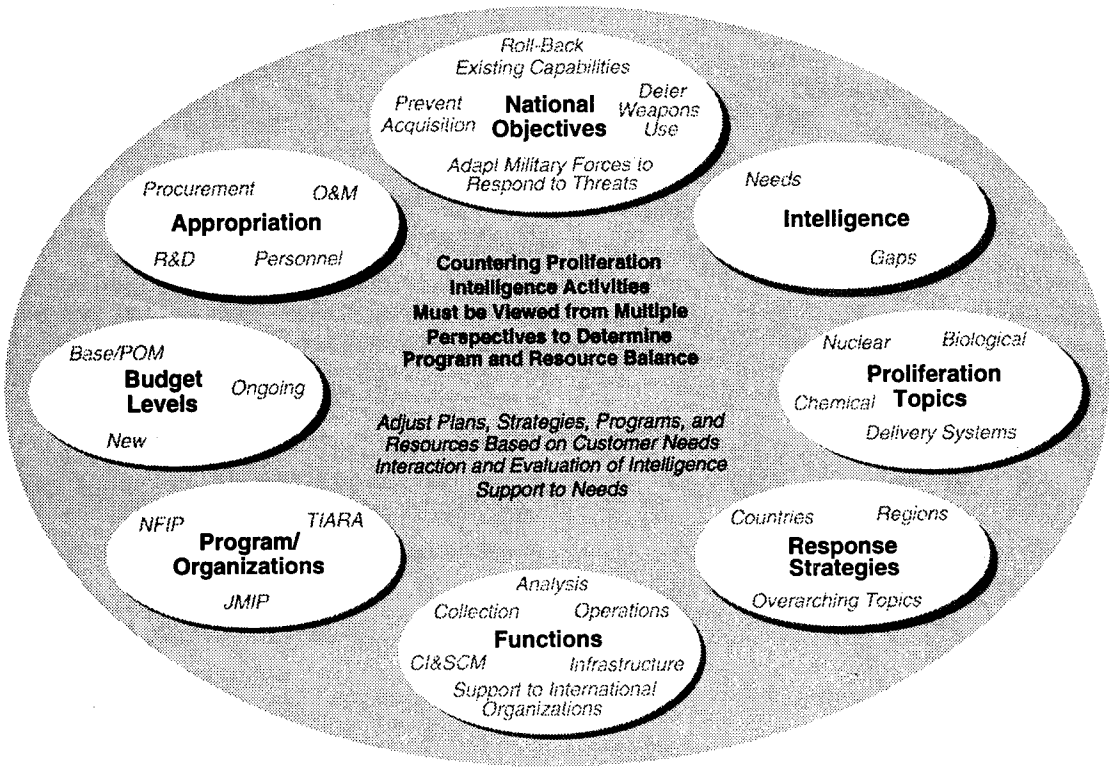


Figure 5.3 Program and Resource Balance for Countering Proliferation

support national proliferation objectives. U.S. Intelligence's countering proliferation strategic planning process has developed a list of priority customer information needs derived from Presidential Directives, Congressional language, the 1994 NPRC Report, and DoD Counterproliferation Policy. These policy needs have been translated into intelligence needs and gaps through a number of planning, strategy and management processes, tools and reports, including the Countering WMD Strategic Plan, the WMD Integrated Collection Strategy, NSC-directed country studies and the Annual Strategic Intelligence Review. Considering these factors, most intelligence capabilities have the potential to assist in supporting customer information needs regarding counterproliferation.

As the threat from proliferation countries has increased, U.S. Intelligence capabilities have been redirected or expanded in accordance with the 1994 NPRC recommendations and include:

- Assessing the intentions and plans of those countries;
- Identifying NBC weapons programs and clandestine transfer networks set up to obtain controlled materials or launder money;
- Supporting diplomatic, law enforcement and military efforts to counter proliferation;

- Providing support for multilateral initiatives and security regimes; and

- Overcoming denial and deception practices set up by proliferators to conceal programs.

The proliferation problem will continue to challenge U.S. Intelligence assets as countries become more adept at concealing their programs and supply routes established to support their activities.

U.S. Intelligence has taken or participated in actions to address the overall challenges to stem proliferation, including:

- Formed the Nonproliferation and Arms Control Technology Working Group (NPAC/TWG) to enhance the coordination of R&D efforts among intelligence, operational, policy and other elements of the U.S. Government. This action was recommended in the 1994 NPRC Report, considered and endorsed by the NSC, and implemented by Presidential Directive.

- Worked on the DCI-commissioned Technical Intelligence Collection Review (TICR) to identify future shortfalls in sensors against WMD and related delivery systems activities. This review was initiated in October 1994 to assess future capabilities to prevent technological surprise by foreign acquisition of WMD and their delivery systems. This review addresses the 1994 NPRC identification of technical and operational needs to increase warning times before foreign targets achieve an actual operational WMD capability.

- Identified funding to maintain Technical Intelligence Collection Programs related to WMD and delivery system tests of proliferant nations.

- Fostered the development of new technologies with the potential to improve our ability to detect WMD activities at significantly longer ranges than possible today. U.S. Intelligence has cooperated with unique short-term financing to explore the efficacy of several high risk, high payoff counterproliferation-related R&D initiatives:

  - DOE funding of 18 R&D initiatives identified by the CIA, with at least half focused directly on proliferation subjects and others that may prove useful against proliferation targets. These projects are now under development at the DOE National Laboratories. (See the Intelligence Annex for details.)

  - NFIP funding of 30 R&D initiatives at various U.S. Government elements. The projects were selected after thorough review and ranking of hundreds of proposals. (See the Intelligence Annex for details.)

- The DOE and CIA Office of Research and Development have established a relationship to enhance joint CIA and DOE National Laboratory R&D cooperation.

- The DOE and the National Reconnaissance Office (NRO) have developed a MOU to enhance their cooperation and work.

- Redirected and reorganized intelligence activities to increase and sharpen the focus of counterproliferation-related efforts -- both analytically and operationally.

Additionally, the creation of the JMIP to coordinate joint, DoD-wide initiatives, activities and programs will provide intelligence information and support to multiple DoD customers and should significantly enhance U.S. Intelligence support to DoD's counterproliferation program.

The details of U.S. Intelligence's activities in countering proliferation are provided in the Intelligence Annex to this report.

5.3.3 Addressing the 1994 NPRC Shortfalls. Details regarding how U.S. Intelligence activities and programs address shortfalls in countering proliferation may be found in the Intelligence Annex.

5.4 Summary of DoD, DOE, and U.S. Intelligence Near-, Mid-, and Long-Term Impacts of New Programs

In this section the impact of both the new initiatives and the prior ongoing and existing programs addressing the 1994 NPRC Areas for Progress are described as a function of time. This breakout of the Areas for Progress in terms of near-term, mid-term, and far-term impact is provided in Figure 5.1 above. The status of each Area for Progress is reviewed in terms of the remaining shortfalls identified for each of the programs described in Sections 5.1 - 5.3. The near-, mid-, and long-term impacts of the new and ongoing programs are summarized for each Area for Progress in the order listed in Figure 5.1.

5.4.1 Near-Term Impact (1996 - 97)

Support CWC and BWC. ACDA was recommended to be program manager by the 1994 NPRC for this area. ACDA activities are not considered in this report. However, DoD and U.S. Intelligence have responsibilities to provide support in this area. These efforts are currently adequately supported by both agencies.

Support Conclusion of Verifiable CTBT. DOE technology development is adequately supported. DOE has consolidated CTBT-related technology development into a single program area which focuses on technologies for detecting, localizing, and characterizing nuclear detonations. This technology development program is sufficient to support the conclusion of a verifiable treaty.

Enhance HUMINT and MASINT Collection and Analysis. See Intelligence Annex.

Shallow Buried Hard Target Defeat. This effort is adequately supported. As a result of resources provided to the DoD in FY 1995 for the Counterproliferation Support Program, the

shallow hard target defeat program has been initiated and will field an ACTD jointly with the European Command (EUCOM) in 1995-96. Supporting CINCs will include the Strategic Command (STRATCOM), U.S. Atlantic Command (USACOM), Special Operations Command (SOCOM), and Space Command (SPACECOM). By the completion of 1997, enhanced capability and residual prototype equipment will have been developed, demonstrated and transferred to the user commands.

Transparency and Control of Foreign Fissile Material. This area is adequately supported. DOE has moved approximately $70 million into the area of MPC&A and Lab-to-Lab interactions in Russia. This effort is to provide modern technology and training to the Russian authorities to assure adequate control of FSU fissile material.

Safe Disposition of Foreign WMD-Related Materials (except fissile materials). DOS was recommended to be the program manager by the 1994 NPRC for this area. DOS activities are not considered in this report. However, DoD has a responsibility to provide support to DOS and the NCA for operations in this area. Currently this is done largely on an ad hoc basis. Proposed efforts to make available DoD assets and capability for securing and transporting WMD related materials are currently not funded. Personnel training, assuring that unique, dedicated assets are available, and that an appropriate legal framework is pre-emplaced are some of the DoD efforts in this area that require increased support.

5.4.2 Mid-Term Impact (1998 - 01)

Remote Detection and Characterization of BW/CW Agents. This effort is adequately supported. It has been accelerated by the addition of FY 1995 Counterproliferation Support Program funding provided by Congress. The product will be remote detection of specific, known agents. Agent nonspecific detectors are currently technology limited and are unlikely to be made available for deployment in this time frame. Current efforts in agent-specific detectors include point detectors integrated with UAVs for characterization as well as helicopter-mounted Lidars for detection and potential characterization. See also the Intelligence Annex.

Underground Structures Detection and Characterization. The area of underground structures detection remains one of the most challenging areas. Although considerable work is ongoing within U.S. Intelligence and DOE in the area of above ground structures, there has been little investment in potentially promising technologies relevant to the detection of underground structures. Characterization of underground targets is also not adequately supported. There has been a significant investment by the DoD Counterproliferation Support Program in this area. However, additional effort is required in the intelligence area to provide adequate information for precision targeting and collateral effects avoidance for most known targets. The new efforts in the DoD Counterproliferation Support Program include unattended sensors, signal processing, and data fusion relevant to underground structures characterization. This effort has been accelerated by the supplemental FY 1995 funding provided by Congress. The near-term focus of the program is to evaluate the feasibility of such capability to adequately characterize and define relevant parameters of such facilities. The purpose is to determine the function and physical

characteristics of underground facilities to allow target defeat with minimum collateral effects by precision targeting with special munitions designed for this purpose. If successful, by the year 2001 these technologies will have been developed, tested, and evaluated in an ACTD sponsored by the military user. See also the Intelligence Annex.

Detection, Tracking, Control and Accountability for WMD-Related Materials and Personnel. This area is adequately supported. The DoD Counterproliferation Support Program includes an effort to support Navy Intelligence to enhance the Navy's capability to track SNM shipments at sea to facilitate interdiction of such shipments at the direction of the NCA. This capability will be made available as early as late 1995 utilizing FY 1995 funding made available by the Congress. In addition, DOE and DoD have undertaken programs to counter criminal operations involving the smuggling of WMD related materials and technology out of the FSU. The DOE program centers on development of technology to "fingerprint" contraband SNM to trace and determine their origin. The DoD/FBI program is in support of FBI operations to counter organized crime in the FSU. This program is funded at a low level to initially define the threat and develop an appropriate program to counter the threat. The program focuses on DoD WMD-related training, sensors, and techniques which might be made available to the FBI to assist in their mission. If it is determined that significant assistance can be rendered to the FBI by the DoD, this will be an area where additional funding will be necessary in the out-years. See also the Intelligence Annex.

Detect, Locate and Render Harmless WMD in the U.S. Although additional resources are being dedicated to this area by both DoD and DOE, significantly more DoD resources will be required to meet program objectives in the mid-term time frame. The major DoD effort is to increase DoD capability in the BW/CW threat area, with a goal towards achieving a capability on a par with that of DOE's NEST for nuclear threat response. Over the last twenty years DOE's strong focus on NEST and the nuclear terrorist problem has resulted in a well thought out, extremely sophisticated capability in this area. It is DoD's objective to develop BW/CW detection and defeat capability and seek training assistance from the DOE NEST Program to improve its BW/CW response capability to match the nuclear response capability of DOE. For both programs there is a focus on pre-emplaced equipment and continued training and rehearsal.

Passive Defenses Enabling Continued Operations. This area is adequately supported, in general. The DoD chemical and biological defense programs within the Services have been consolidated under the CBD Program to increase program efficiency and avoid duplication. This will facilitate the development of protective gear, NBC agent detectors, medical response, and decontamination with joint application. In addition, the program supports joint doctrine development and training. However, joint NBC doctrine development and implementation, particularly in the BW/CW area, remains a shortfall.

Rapid Production of BW Vaccines. A DoD plan is being developed and reviewed that procures BW vaccines through a prime contractor. This arrangement will take advantage of the bio-industrial base assuring modern bio-tech capabilities are utilized in support of DoD requirements. Adequate support is expected, and budget issues are currently being worked by the JPO-BD through the FY 1997 DoD POM process.

Detection and Intercept of Stealthy Cruise Missiles. This area requires additional support to achieve an effective, operational capability in the mid-term time frame. Current DoD reviews are underway to evaluate acceleration of technology development and integration as well as demonstration and evaluation of integrated sensors and platforms necessary to provide an effective cruise missile defense. This area remains one of the highest priority areas on the CINCs' list of operational capabilities.

Mobile Target Kill. Although adequate resources are dedicated to this area, it is unlikely that an effective operational capability will be fielded in the mid-term time frame. This is due in part to the technical difficulty associated with locating and tracking targets as well as providing timely sensor-to-shooter linkage. Ongoing programs include ARPA's Warbreaker program focused on distributed interactive simulation and an Air Force program to evaluate sensors and operational concepts.

5.4.3 Far Term Impact (2002+)

This time frame for meeting the goals described below is outside of the current DoD POM and DOE and U.S. Intelligence budget planning cycles. Therefore, the likelihood of providing the operational capabilities described below is not addressed here. However, the adequacy of currently funded R&D efforts leading to the desired operational capability is evaluated.

Capability to Detect, Locate and Disarm WMD in the United States and Abroad. In addition to R&D shortfalls in this area discussed above, additional support is required for pre-emplacement of equipment for NBC response teams abroad as well as development of specialized equipment and training for SOF response to WMD-related paramilitary operations in-theater in time of conflict. Of particular concern is entry into theater and defense of critical mobilization nodes against the peacetime equivalent of an NBC terrorist threat.

Deep Hard Underground Targets. Although current funding is focused on near- and mid-term objectives of shallow buried targets and target characterization, incremental funds have been provided by the Deputy Secretary of Defense to focus on tunnel or deep structures in FY 1996. Assuming stable long term funding and that near- and mid-term objectives are realized, this work, combined with a transition of funds from shallow buried targets to deep targets or tunneled targets, should prove sufficient to address the very hard targets in the far-term. In 1998 DoD will conduct limited tests against tunneled structures to evaluate our extant capability as well as formulate a more vigorous program to defeat these structures. For such targets, direct attack may not be possible. The projected program emphasizes the attack of critical support nodes and other potentially vulnerable features of such targets. See also Intelligence Annex.

Intercept in Boost Phase. This area is currently under funded. Although the 1994 NPRC Report lists boost phase intercept as adequately funded, the funding for the Air Force portion of this program in FY 1995 was reduced by $50 million. This money combined with about the same amount from BMDO was planned to support a boost phase ACTD. Reduced funding has resulted

in reexamination of operational concepts. However, sensors and related platforms integral to both boost phase intercept and cruise missile defense should be moved forward to support both of these high priority programs.

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6. Programmatic Options

In this section, the programmatic options proposed by the CPRC to address remaining shortfalls in operational capabilities are described. These programmatic options are being reviewed for implementation during the FY 1997 budget process. Only DoD programmatic options are described here. The proposed new U.S. Intelligence programmatic options for FY 1997 are described in the Intelligence Annex. DOE does not, at this time, propose any new options. After FY 1996, DOE will remain prepared to acquire and store material that may become available from states of the FSU, as it did in 1995.

6.1 DoD Programmatic Options

Since the implementation of new initiatives in response to the 1994 NPRC review, the DoD has identified a number of promising technologies and activities which address remaining shortfalls in operational capabilities consistent with the Areas for Progress (Table 2.1) and the CINCs' prioritized list of counterproliferation capabilities (Table 4.4). Budget estimates to implement these programmatic options total about $103 million per year over the current projected investment in the Counterproliferation Support Program. (The $103 million figure does not include U.S. Intelligence or DoD Special Access Program programmatic options.) These programmatic options will be reviewed by the CINCs and evaluated as part of normal budget development (including the POM and budget review processes) for the period beginning in FY 1997 in the context of other pressing DoD priorities. The seven new programmatic options being examined are described below.

Countering Covert BW/CW Delivery. The March 1995 poison gas attack on commuters in Japan provided graphic evidence that NBC weapons are within the reach of sub-national groups and ideologues. This event points out the vulnerability of institutions in developed countries to a covert NBC weapon attack. Military bases, points of embarkation, and municipal structures such as dams and nuclear power plants share these vulnerabilities and are inviting targets in peacetime as well as during war. The Counterproliferation Support Program is addressing a current shortfall in our planning by supplying methods to secure perimeters around fixed military installations against the introduction of a covert NBC weapon during war, low intensity conflict, or peacetime and to develop safe and effective detection, disarming, and render safe procedures under non-permissive or hostile action. The focus of the project is to develop capabilities to respond to chemical and biological threats that are comparable to current U.S. capabilities to respond to nuclear threats. This project will expand the capability to protect military installations and perform civil defense functions in both peacetime and war. In coordination with the Interagency Counterterrorism Working Group, this effort will develop technologies to detect concealed chemical and biological devices, disarm or defuse them upon discovery, and mitigate the consequences if they are detonated. These technologies will be demonstrated in realistic exercises to determine their efficacy and to evaluate deficiencies in current capabilities and contingency planning. This effort is intended to meet the mid-term objectives for countering these threats within the U.S. and the far-term objectives for countering these threats overseas. The estimated annual level of effort for this project in FY 1997 is expected to be $15.0 million.

Airborne Cruise Missile and Boost Phase Ballistic Missile Defense. DoD is planning and developing sensors and associated defensive capabilities for airborne cruise missile defense which were reviewed in January 1995 by the Deputy Secretary of Defense. These capabilities include the development of a demonstration fire control sensor which is scheduled to begin flight testing in the Summer of 1996. The fire control sensor has an inherent capability to detect and cue interceptor systems against cruise missiles and, with new software, against tactical ballistic missiles. This initiative will increment the ongoing effort by providing the modifications necessary to make the sensor an effective tactical ballistic missile defense sensor. Funding will be provided for additional sensors to enable airborne boost phase surveillance and fire control over large tactical ballistic missile launch areas (roughly 15,000 square km). The additional sensors will replicate the technology which will be flight tested in FY 1996; therefore the manufacturing processes are well understood and there is very little non-recurring engineering (NRE). Software modifications for tactical ballistic missile boost phase cueing will also be funded. Additionally, this initiative will procure operational data links to assure communications compatibility with all Services and to support future boost phase defense demonstrations. This effort has little budget or schedule risk. This effort is intended to address mid-term objectives to detect and intercept stealthy cruise missiles and the long-term objective of supporting boost phase intercept. The estimated annual level of effort for this project in FY 1997 is expected to be $70.0 million.

DoD Special Access Programs. Descriptions of these programs will be provided upon special request.

WMD Buy-Down. Selective opportunities exist for purchasing on the open market critical items that a proliferant state may need to build or deliver WMD. On at least four occasions in the last three years foreign countries have proposed to sell WMD parts or delivery systems to the U. S. Government. The items offered for sale have included raw fissile material, components from manufactured nuclear weapons, and launch support hardware for short range ballistic missiles. Despite an almost universal conclusion among Executive Branch agencies that securing foreign WMD-related hardware and removing it from the international market is in the best interests of the U.S., only one successful purchase was negotiated during this period. Sales fell through because of the length of negotiations, a lack of transportation resources to remove the materials, and the interference of a third country in the negotiations. It is highly likely that the U.S. will be requested to conduct similar operations in the future. While it is clear that the U.S. is ultimately capable of responding to these opportunities, the organizational structure to carry out such "Give and Go" operations has not yet been established nor have the necessary materiel and resources been earmarked or acquired in a systematic fashion. The objectives of the project are to assess DoD capabilities to respond to requests from the NCA to acquire, secure, and extract WMD and WMD-related materials from states or other entities that make them available to us, to make recommendations for formalizing this capability, and to develop and acquire any specialized equipment needed to conduct extraction operations. The project will also examine potential sites to which WMD/WMD-related materials can be transported and methods for their storage, neutralization and disposal/destruction. Finally, the project will also provide for periodic readiness exercises for the overall "Give and Go" capability. This project addresses near-term "safe disposition" objectives and mid-term objectives of WMD "detection and tracking." The estimated annual level of effort for this project in FY 1997 is expected to be $2.0 million.

Advanced Weapon Concepts. This project will explore innovative concepts to widen the expected damage radius of penetrating weapons while minimizing collateral effects. The Air Force has completed a study which demonstrated the feasibility of smaller guided weapons with applicability as both unitary and submunition concepts. Studies have shown the effectiveness of this type of weapon against a broad target set and as a force multiplier providing multiple kills per sortie. This proposed project would extend such concepts and others to the WMD target set. The overall project would consist of: a concept feasibility study; weapon prototype design, development, and demonstration; and supporting technology base efforts to evaluate collateral effects implications and to incorporate weapon effects into operational target planning systems. This project will provide an enhanced mid-term capability to defeat shallow buried targets and, by enabling deeper weapon penetration, will enable the defeat of a wider class of more deeply buried targets. The estimated annual level of effort for this project in FY 1997 is expected to be $5.0 million.

Remote Detection and Tracking of Chemical Aerosols. The Scanning Airborne Fourier Emission for Gaseous Ultraspectral Analysis and Radiometric Detection (SAFEGUARD) project is a multi-agency effort for the detection of chemical vapor precursors and agents from medium and high altitude airborne platforms. The current program has matured as part of both the National Spectroradiometric Assessment Study (NSAS) and the Airborne Emission Spectrometer (AES) program. Both of these efforts investigate the atmospheric phenomenology of chemical species detection from high and medium altitudes. Research has also yielded the first documented quantitative detection of an industrial chemical vapor species collected from a passive infrared airborne chemical vapor sensing platform. The project is designed to develop a remote sensing system for battlefield detection of CW agents, to detect chemical precursors associated with WMD production, and to detect other chemical species associated with military applications. Existing technology will be applied to detect and characterize suspected WMD facilities. Data collected from these facilities will be analyzed using reverse engineering principles to characterize the purpose of the facility. Because of recent technical breakthroughs, the U.S. Army Edgewood Research, Development and Engineering Center (ERDEC) is proposing a coordinated multi-agency fast track "skunk works" program that would significantly enhance U.S. capabilities for the detection and analysis of WMD chemical precursors. An airborne sensor platform test bed will be developed for operational testing. This project satisfies mid-term objectives for passive defense and remote detection of CW agents. The estimated annual level of effort for this project in FY 1997 is expected to be $9.0 million.

Wargaming/Simulation for Joint NBC Doctrine Development. Joint doctrine is lacking in the BW/CW area and, therefore, it is difficult to continue meaningful wargaming when BW/CW enters into the scenarios. Currently, planners do not have the tools to evaluate the consequences of their decisions regarding post NBC weapons attacks. The objective of this project is to develop a simulation capability to realistically play BW/CW in wargames and, from this, support the development of a joint BW/CW doctrine agreeable to the JCS and the Services. The key project deliverable is a coordinated and approved BW/CW joint doctrine that can be evaluated, using realistic wargame scenarios, and developed for implementation by the JCS and the Services. This project addresses mid-term objectives related to "passive defense enabling continued

operations." The estimated annual level of effort for this project in FY 1997 is expected to be $2.0 million.

6.2 DOE Programmatic Options

The DOE will continue to pursue its nonproliferation and weapons related activities. While it has not identified any specific counterproliferation programmatic options for FY 1997, DOE will evaluate the CINCs' priority listing for possible initiatives. The DOE will also continue to maintain its unique and comprehensive nonproliferation technology base to address long term nonproliferation and counterproliferation-related needs. Additionally, DOE will retain its options for the purchase and storage of materials from the FSU which could be used in WMD production, as DOE did in FY 1995.

6.3 U.S. Intelligence Programmatic Options

The reader is referred to the Intelligence Annex for information on U.S. Intelligence's programmatic options.

7. CPRC Recommendations

The CPRC endorsed the 1994 NPRC Nonproliferation/Counterproliferation Areas for Progress and the JCS/CINC prioritized counterproliferation capabilities. The two lists have been combined and the Counterproliferation Areas for Capability Enhancements (ACEs) established to characterize those areas where progress is needed to enhance both the warfighting capabilities of the CINCs and the overall ability to satisfy the demands of U.S. nonproliferation and counterproliferation policy. The CPRC will use the Counterproliferation ACEs as the basis for further reviews and to assess future progress in meeting counterproliferation and related nonproliferation mission needs.

Table 7.1 summarizes the 15 Counterproliferation ACEs defined by the CPRC for this year. They clearly focus on areas where the DoD, DOE and U.S. Intelligence are responsible for meeting policy needs and operational requirements for countering proliferation, and, in particular, on the warfighting needs of the CINCs. Their prioritization follows closely that of the CINCs' prioritization of counterproliferation capabilities (see Table 4.4).

Table 7.1: CPRC Counterproliferation Areas for Capability Enhancements

Counterproliferation ACEs (in priority order)
1.) Detection, Identification, and Characterization of BW/CW Agents
2.) Cruise Missile Defense
3.) Theater Ballistic Missile Defense
4.) Detection, Characterization, and Defeat of Underground WMD Facilities
5.) Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter
6.) Robust Passive Defense to Enable Continued Operations on the NBC Battlefield
7.) BW Vaccine RDT&E and Production to Ensure Availability
8.) Target Planning for WMD Targets
9.) BW/CW Agent Defeat
10.) Detection and Tracking of WMD and WMD-Related Shipments
11.) Prompt Mobile Target Detection and Defeat
12.) Support for Special Operations Forces
13.) Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats
14.) Support Export Control Activities of the U.S. Government
15.) Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes

The FY 1996 President's budget submitted to Congress in January 1995 was prepared under strong Administration guidance to address priority programs for countering proliferation. The CPRC recommends that the FY 1996 budget be authorized and appropriated by the Congress.

Countering proliferation is an area that will have to be addressed for the foreseeable future. Although the programs proposed in the FY 1996 budget will produce substantial progress toward U.S. capabilities to address WMD proliferation, Section 5 identifies several areas of shortfall, some of which will remain after FY 1996. Therefore, it is the intention of the CPRC to review FY 1997 and out-year programs and programmatic options associated with countering proliferation and recommend to the Secretary of Defense, the Chairman of the JCS, the Secretary of Energy, and the DCI, the modification, deletion, or addition of programs as appropriate.

These recommendations will be considered in the preparation of the FY 1997 and out-year budgets to be submitted to the Congress in FY 1996 and beyond. Approved programs will also be reflected in the CPRC report to be submitted to the Congress on May 1, 1996.

APPENDICES

A. Congressional Language Establishing the 1995 CPRC and Its Reporting Requirements

B. CPRC Study Participants

C. Summary of Key DoD Programs Strongly Related to Countering Proliferation

D. Planned FY 1996 Budget Profile for DOE Programs Related to Countering Proliferation

E. Listing of Abbreviations and Acronyms used in this Report

- **Intelligence Annex** (bound separately)

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APPENDIX A

Congressional Language Establishing the 1995 CPRC and Its Reporting Requirements

National Defense Authorization Act for Fiscal Year 1995

SEC. 1605. JOINT COMMITTEE FOR REVIEW OF COUNTERPROLIFERATION OF THE UNITED STATES (as amended by Section 1502)

(a) ESTABLISHMENT: (1) There is hereby established a Counterproliferation Program Review Committee composed of the following members:

(A) The Secretary of Defense.

(B) The Secretary of Energy.

(C) The Director of Central Intelligence.

(D) The Chairman of the Joint Chiefs of Staff.

(2) The Secretary of Defense shall chair the committee. The Secretary of Energy shall serve as Vice Chairman of the committee.

(3) A member of the committee may designate a representative to perform routinely the duties of the member. A representative shall be in a position of Deputy Assistant Secretary or a position equivalent to or above the level of Deputy Assistant Secretary. A representative of the Chairman of the Joints Chiefs of Staff shall be a person in a grade equivalent to that of Deputy Assistant Secretary of Defense.

(4) The Secretary of Defense may delegate to the Under Secretary of Defense for Acquisition and Technology the performance of the duties of the Chairman of the committee. The Secretary of Energy may delegate to the Under Secretary of Energy responsible for national security programs of the Department of Energy the performance of the duties of the Vice Chairman of the committee.

(b) PURPOSES OF THE COMMITTEE: The purposes of the committee are as follows:

(1) To optimize funding for, and ensure the development and deployment of

(A) highly effective technologies and capabilities for the detection, monitoring, collection, processing, analysis, and dissemination of information in support of United States counterproliferation policy; and

(B) disabling technologies in support of such policy.

(2) To identify and eliminate undesirable redundancies or uncoordinated efforts in the development and deployment of such technologies and capabilities.

(3) To establish priorities for programs and funding.

(4) To encourage and facilitate interagency and interdepartmental funding of programs in order to ensure necessary levels of funding to develop, operate, and field highly-capable systems.

(5) To ensure that Department of Energy programs are integrated with the operational needs of other departments and agencies of the Government.

(6) To ensure that Department of Energy national security programs include technology demonstrations and prototype development of equipment.

(c) DUTIES: The committee shall

(1) identify and review existing and proposed capabilities and technologies for support of United States non-proliferation policy and counterproliferation policy.

(A) intelligence;
(B) battlefield surveillance;
(C) passive defenses;
(D) active defenses; and
(E) counterforce capabilities;

(2) prescribe requirements and priorities for the development and deployment of highly effective capabilities and technologies;

(3) identify deficiencies in existing capabilities and technologies;

(4) formulate near-term, mid-term, and long-term programmatic options for meeting requirements established by the committee and eliminating deficiencies identified by the committee.

(5) assess each fiscal year the effectiveness of the committee actions during the preceding fiscal year, including, particularly, the status of recommendations made during such preceding fiscal year that were reflected in the budget submitted to Congress pursuant to section 1105(a) of title 31, United States Code, for the fiscal year following the fiscal year in which the assessment is made.

(d) ACCESS TO INFORMATION: The committee shall have access to information on all programs, projects, and activities of the Department of Defense, the Department of State, the Department of Energy, the intelligence community, and the Arms Control and Disarmament Agency that are pertinent to the purposes and duties of the committee.

(e) RECOMMENDATIONS: The committee shall submit to the President and the heads of all appropriate departments and agencies of the Government such programmatic recommendations regarding existing, planned, or new programs as the committee considers appropriate to encourage funding for capabilities and technologies at the level necessary to support United States counterproliferation policy.

(f) TERMINATION OF COMMITTEE: The committee shall cease to exist at the end of September 1996.

SEC. 1503. REPORTS ON COUNTERPROLIFERATION ACTIVITIES AND PROGRAMS.

(a) REPORT REQUIRED. Not later than May 1, 1995, and May 1, 1996, the Secretary of Defense shall submit to Congress a report of the findings of the Counterproliferation Program Review Committee established by subsection (a) of the Review Committee charter.

(2) For purposes of this section, the term "Review Committee charter" means section 1605 of the National Defense Authorization Act for Fiscal Year 1994 (Public Law 103-160), as amended by section 1502.

(b) CONTENT OF THE REPORT. Each report under subsection (a) shall include the following:

(1) A complete list, by specific program element, of the existing, planned, or newly proposed capabilities and technologies reviewed by the Review Committee pursuant to subsection (c) of the Review Committee charter.

(2) A complete description of the requirements and priorities established by the Review Committee.

(3) A comprehensive discussion of the near-term, mid-term, and long-term programmatic options formulated by the Review Committee for meeting requirements prescribed by the Review Committee and for eliminating deficiencies identified by the Review Committee, including the annual funding requirements and completion dates established for each such option.

(4) An explanation of the recommendations made pursuant to subsection (c) of the Review Committee charter, together with a full discussion of the actions taken to implement such recommendations or otherwise taken on the recommendations.

(5) A discussion and assessment of the status of each Review Committee recommendation during the fiscal year preceding the fiscal year in which the report is submitted, including, particularly, the status of recommendations made during such preceding fiscal year that were reflected in the budget submitted to Congress pursuant to section 1105(a) of title 31, United States Code, in the fiscal year of the report.

(6) Each specific Department of Energy program that the Secretary of Energy plans to develop to initial operating capability and each such program that the Secretary does not plan to develop to initial operating capability.

(7) For each new technology program scheduled to reach operational capability, a recommendation from the Chairman of the Joint Chiefs of Staff that represents the views of the commanders of the unified and specified commands regarding the utility and requirement of the program.

(c) FORMS OF REPORT. Each such report shall be submitted in both classified and unclassified forms, including an annex to the classified report for special compartmented programs, special access programs, and special activities programs.

SEC. 1607. DEFINITIONS.

For purposes of this subtitle:

(1) The term "appropriate congressional committees" means ---

(A) the Committee on Armed Services, the Committee on Appropriations, the Committee on Foreign Relations, and the Select Committee on Intelligence of the Senate; and

(B) the Committee on Armed Services, the Committee on Appropriations, the Committee on Foreign Affairs, and the Permanent Select Committee on Intelligence of the House of Representatives.

(2) The term "intelligence community" has the meaning given such term in section 3 of the National Security Act of 1947 (50 U.S.C. 401a).

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APPENDIX B

CPRC Study Participants

- **Principals**

Dr. Paul G. Kaminski - CPRC Chairman, Under Secretary of Defense for Acquisition and Technology

Mr. Charles B. Curtis - CPRC Vice Chairman, Under Secretary of Energy

Dr. Gordon Oehler - Special Assistant to the DCI for Nonproliferation

BGen Tony Tolin - Deputy Director for Strategy and Policy, Joint Chiefs of Staff, J-5

Dr. Gordon Adams - Office of Management and Budget

Mr. Ken Baker - Director, Office of Nonproliferation and National Security, Department of Energy

Mr. Max Koontz - Office of Nonproliferation and National Security, Department of Energy

Mr. Frank Miller - Principal Deputy to the Assistant Secretary of Defense for International Security Policy

Dr. Harold P. Smith - Assistant to the Secretary of Defense for Atomic Energy

Dr. Mitch Wallerstein - Deputy Assistant Secretary of Defense for International Security Policy

Dr. Christine Williams - Chairman, National Intelligence Council

- **CPRC Working Level Officials**

Ms. Alane A. Andreozzi-Beckman - Defense Nuclear Agency, Counterproliferation Program Support Office

Mr. William Barnett - Department of the Army, Deputy Chief of Staff for Operations and Plans

Mr. Jerry Burke - Deputy Assistant Secretary of Defense for Intelligence and Security

Mr. Steve Dotson - Office of Management and Budget

Lt Col Chip Frazier - Department of Defense, Counterproliferation Analysis and Response

Dr. James L. Fuller - Office of Nonproliferation and National Security, Department of Energy

Lt Col Chris Gaston - Headquarters U. S. Air Force, National Security Negotiations Division

Mr. Mark Grohman - Office of the Assistant to the Secretary of Defense for Atomic Energy

Capt Ronald D. Gumbert - Joint Chiefs of Staff, J-5

Mr. Mike Hall - Office of Assistant to the Secretary of Defense for Atomic Energy

Mr. John A. Hartford - DCI Nonproliferation Center

Mr. Gregory Henry - Office of Management and Budget

Mr. James Horton - Office of the Assistant to the Secretary of Defense for Atomic Energy, Chemical Biological Matters

Mr. Doug Hudson - Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence, Intelligence Program Support Group

Cdr Frank Klein - Joint Chiefs of Staff, J-6E

Mr. Cliff McFarland - Defense Nuclear Agency

Mr. David Newsom - DCI Nonproliferation Center

Lt Col Richard Passow - Defense Nuclear Agency/OPAC

Lt Col Tom Poulos - Joint Chiefs of Staff, J-5

Capt Roger Sherwood - Office of the Assistant to the Secretary of Defense for Atomic Energy

Dr. William B. Shuler - Deputy for Counterproliferation, Office of the Assistant to the Secretary of Defense for Atomic Energy

Mr. Robert E. Waldron - Office of Nonproliferation and National Security, Office of Research and Development, Department of Energy

Mr. Craig Wilson - Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence

Lt Col Steve York - Joint Chiefs of Staff, J-5

APPENDIX C

Summary of Key DoD Programs Strongly Related to Countering Proliferation

Introduction. In the tables the follow, the Counterproliferation Support Program (Table C.1), the Joint Consolidated Chemical/Biological Defense Program (Table C.2), and Joint DoD Programs to Counter Paramilitary/Covert and Terrorist WMD Threats (Table C.3) are summarized along with other key DoD agency and Service programs strongly related to counterproliferation. The summaries include: project title, project description, corresponding Area for Progress, executing agency, FY 1996 budget profile, and Program Element number.

Table C.1: Counterproliferation Support Program

Program/Project Title	Project Description	Area for Prog.*	Agency**	FY96 Budget [$M]	PE No.
• **Proliferation Prevention** - Specific Emitter Identification System (SEI)	- Deployment and operation of equipment to improve the Navy's ability to identify and track WMD-related shipments at sea	D	Navy	2.786	604160D
- Joint DoD/FBI FSU WMD Smuggling Study	- Assess applicability of DoD technologies, capabilities and training to FBI counterproliferation capabilities	D	FBI	TBD	605160D
• **Strategic and Tactical Intelligence**	(See Proliferation Prevention and Battlefield Surveillance Projects)				
• **Battlefield Surveillance** - Tactical FLIR Sensor	- Improved surface BDA of underground facilities	B	DNA	0.906	603160D
- Tactical UGS System	- Continuous surveillance, target characterization and BDA of WMD targets (fixed and mobile)	B	DNA	4.669	603160D
- Weapon-Borne BDA Sensor	- Improved real-time subsurface BDA	B/C	DNA	0.527	603160D
- Data Fusion and Signatures	- Accurate characterization of underground WMD targets	B	DNA ARPA	3.233	603160D
• **Counterforce** - Collateral Effects Phenomenology Assessment	- Source term characterization and transport prediction; phenomenology experiments and assessment tools	C	DNA	8.915	603160D
- Advanced Weapon Systems (unitary penetrator, weaponization of advanced payloads, and ITAG system)	- Development of an enhanced penetrating munition for underground target defeat; expanded compatibility with delivery platforms; all-weather capability	C	DNA Air Force	14.300	603160D
- Enhanced Weapon Payloads for Underground Target Defeat	- Development of high temperature incendiary and classified payloads	C	DNA	3.448	603160D
- BW/CW Agent Neutralization Weapons	- Development of prototype BW/CW agent defeat munitions	C	DNA Air Force	3.981	603160D
- WMD Target Response and Vulnerability Assessment	- Experimental and analytical analyses of WMD target response/vulnerability and automated target planning for WMD targets, and proliferation path assessment	C	DNA	9.182	603160D
- Tunnel Defeat	- Assessment of tunnel response and vulnerability	C	DNA	9.952	602160D

Program/Project Title	Project Description	Area for Prog.*	Agency**	FY96 Budget [$M]	PE No.
- Counterproliferation ACTD	- Integrated operational to support early deployment of new capabilities	B/C	DNA EUCOM	2.786	603160D
• **Active Defense**	none				
• **Passive Defense** - Long Range, Eye Safe IR Lidar	- Accelerated deployment (6 yrs) of full Army complement of airborne eye-safe IR Lidars for battlefield BW/CW agent aerosol detection and tracking	A	JPO-BD Army/ CBDCOM	12.800	604384BP
- UV Lidar for BW Identification	- Enhanced RDT&E of UV Lidar technology for standoff BW identification	A	Army/ CBDCOM	4.000	602384BP
- Miniaturized BW Agent Detectors	- Enhanced RDT&E for selected BW agent detector technologies, including UAV integration for standoff BW characterization	A	ARPA NRL USMC	3.300	602384BP
- CW Agent Surface Acoustic Wave Detector	- Enhanced development and rapid prototyping of CW agent detectors for a variety of applications	A	ARPA NRL	2.400	602384BP
- JSLIST Individual Protection Gear	- Accelerated deployment (by 2 yrs) of this advanced technology lightweight chem-bio protection suit	J	USMC	3.600	604384BP
- Advanced Integrated Collective Protection System	- Accelerated deployment (by 1 yr) of this unique air filtration, condition, and integrated power system	J	Army/ CBDCOM	2.400	604384BP
- BW/CW Decontamination Tech Base	- Enhanced RDT&E leading to advanced development of a selected technology in FY97	J	Army/ CBDCOM	2.000	602384BP
- Joint NBC Simulation and Training	- Development of enhanced simulation and training.	J	Army/ CBDCOM CMLS	2.000	605384BP
- Joint NBC Operational Planning and Doctrine	- Development of tactics, techniques, and procedures to facilitate Joint NBC operations	J	Army/ CBDCOM NDU	1.200	605384BP
• **Countering Paramilitary/Covert/Terrorist WMD Threats** - Evaluation of Military Facility WMD Defense	- Assessment of protecting military bases and mobilization/logistic nodes from paramilitary/ covert WMD threats.	E/I	DNA/ NIP	0.497	605160D
- Advanced Technology for Countering BW/CW Threats	- Development of technologies and prototypes to assist SOF in countering BW/CW threats	E/I	ASD (SO/LIC)	3.384	603160D
- Joint SOF WMD Readiness Exercises	- Conduct Joint exercises to coordinate roles and lines of authority, develop operational requirements, evaluate new technologies, and identify necessary logistical support	E/I	Navy/ EOD	0.995	605160D
• **Special Activities and Reports**	- Analysis, architecture, and technical studies; integrated counterproliferation planning; and managerial support for the Counterproliferation Support Program	All DoD areas	DATSD (AE)(CP)	4.976	605160D
		• **Total:**		**108.200**	

* Refer to Table 2.1 in text

** DATSD(AE)(CP) is responsible for providing management oversight and coordination of the Counterproliferation Support Program projects

Table C.2: Consolidated Chemical/Biological Defense Program

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Passive Defense** • ***RDT&E*** - Non -medical Chem/Bio Defense	· Basic research in chemistry, life sciences, and physics in support of chem/bio defense.	A/J	Army	2.000	601384BP
- Medical Chemical Defense	· Basic research on medical countermeasures to chemical agents.	J	Army	7.259	601384BP
- Medical Biological Defense	· Basic research on the development of drugs and vaccines for biological defense.	J/K	Army	14.688	601384BP
- Chem/Bio General Defense	· Exploratory development of antibody development, individual soldier chemical detector, and BW UV standoff detector technology	A/J	Army	24.595	602384BP
- Medical Biological Defense	· Exploratory development of drugs and vaccines for biological defense.	J/K	Army	11.244	602384BP
- Medical Chemical Defense	· Exploratory development of treatments for chemical agent casualties	J	Army	12.922	602384BP
- Shipboard Chem/Bio Tech.	· Exploratory development of improved protection technologies for the fleet	A/J	Navy	2.604	602384BP
- Medical Biological Defense Vaccines and Drugs	· Preclinical development of vaccines and drugs and advanced development of detector kits	J/K	Army	9.878	603384BP
- Medical Chemical Defense Life Support Materiel	· Investigation of new medical countermeasures for chemical agents	J	Army	9.408	603384BP
- Chem/Bio Defense Systems Advanced Development	· Demonstration of technology advancements in detection/identification, decontamination, and individual/collective protection	A/J	Army	3.998	603384BP
- NBC Contamination Avoidance	· Demonstration and validation of chemical and biological detection technology	A	Army JPO-BD	7.429	603884BP
- NBC Protection Systems**	· Demonstration and validation of Advanced Integrated Collective Protection System	J	Army	9.593	603884BP
- NBC Decontamination Systems	· Demonstration and validation of Modular Decontaminating System and advanced sorbent technology	J	Army	6.870	603884BP
- Medical Chemical Defense Life Support Materiel	· Advanced development of pretreatments and antidotes for chemical agents and casualty decontamination	J	Army	4.311	603884BP
- Shipboard Chem/Bio Defense	· Advanced development of shipboard chem/bio defense systems, including Chemical Agent Remote Detection System (CARDS) and collective protection systems	A/J	Navy	2.080	603884BP
- Naval Aircraft Chem/Bio Defense	· Advanced development of concepts of operation of naval aircraft in contaminated environments	J	Navy	0.178	603884BP
- USMC NBC Equipment	· Advanced development of Lightweight NBC Reconnaissance System and support of JSLIST I	A/J	Navy	2.000	603884BP
- NBC Contamination Avoidance	· EMD of ACADA, MICAD, Fox NBCRS improvements, Pocket Radiac Meter, Airborne Radiac System, Chem/Bio Mass Spectrometer, and Biological Point Detector.	A	Army	7.950	604384BP

Program/Project Title	Project Description	Area for Prog.*	Agency**	FY96 Budget [$M]	PE No.
- NBC Protection Systems**	· EMD of XM45 Mask, AICPS, M40 Mask product improvement, and M20 Collective Protection	J	Army	4.529	604384BP
- Medical Chemical Defense Life Support Materiel	· EMD of medical aerosolized nerve agent antidote and topical skin protectant	J	Army	0.341	604384BP
- JSLIST**	· EMD of advanced chem/bio protective suit	J	Army	2.264	604384BP
- Joint Bio-Defense - Medical	· EMD of vaccines, antitoxins, and drugs for biological defense	J/K	JPO-BD	6.746	604384BP
- Joint Bio-Defense - BIDS	· Development of the BIDS for point detection of BW agents	A	JPO-BD	30.199	604384BP
- Joint Bio-Defense - IBAD/BADS	· Development of point and standoff BW detectors for shipboard use.	A	JPO-BD	2.422	604384BP
- Joint Bio-Defense - Standoff**	· Development of long and short range IR and UV biological stand-off detection systems	A	JPO-BD	14.768	604384BP
- Shipboard Chem/Bio Counter-measures	· Development of chem/bio defensive systems for surface ships	A/J	Navy	2.103	604384BP
- Naval Aircrew Chem/Bio Defense	· Upgrades of existing protective equipment for Navy and Marine Corps air crews.	J	Navy	1.083	604384BP
- Air Force Chem/Bio Defense	· Development of Air Force specific decontamination equipment and detectors.	A/J	Air Force	0.537	604384BP
- Air Force Individual Protection	· Development of chem/bio protective equipment for aircrews and ground crew	J	Air Force	3.582	604384BP
- Join Chem/Bio Contact Point	· Repository of chem/bio info for multiple users	J	Army	1.736	605384BP
	Total RDT&E			***209.317***	
• ***Procurement***					
- M40 Protective Mask	· Procurement of M40-series masks	J	Army	18.451	301100
- PATS	· Protection Assessment Test System (Protective Mask Fit Validation System)	J	Army	6.368	301100
- M21 RSCAAL	· Standoff Chemical Agent Detector	A	Army	4.190	301200
- ICAM	· Improved Chemical Agent Monitor	A/J	Army	7.332	301230
- NBCRS	· Procurement of Fox NBCRS vehicle	A	Army	46.033	301260
- Pocket Radiac Meter	· Compact radiation measuring device	A	Army	3.729	301300
- Bio Standoff	· Advanced procurement for bio-standoff systems	A	JPO-BD	2.985	301520
- BIDS Advanced Procurement	· Advanced procurement for BIDS	A	JPO-BD	6.693	301520
- BIDS NDI	· Procurement of non-developmental version of BIDS	A	JPO-BD	13.182	301520
- CB Protective Shelters	· Collective protection shelters to replace current systems	J	Army	11.494	301420
- M17 Decon Mods	· Modifications to M17 Decontamination System	J	Army	3.165	301290
- Air Force CB Defense Equipment	· Procurement of detectors and protective equipment	A/J	Air Force	11.049	301620
- Navy Chemical Detectors	· Shipboard chemical detectors	A	Navy	5.455	301720
- Shipboard CBR Equipment	· Protective suits, individual detectors, and masks	A/J	Navy	0.498	301780
	Total Procurement			***141.0***	
	CBD Combined Total			**350.317**	

* Refer to Table 2.1 in text

** Supplemented by the Counterproliferation Support Program

Table C.3: Other Key U.S. Army Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Passive Defense**					
- Dugway Proving Ground	· Operation of the primary test facility for chem/bio defense equipment	J	Army	10.065	605601A
- Nuclear Effects Survivability Technology	· Develops and provides nuclear weapons effects survivability technology	J	Army	4.084	602120A
	Total			**14.149**	

* Refer to Table 2.1 in text

Table C.4: Other Key U.S. Navy Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Passive Defense**					
- Radiological Controls	· Research and development of various radiation detection and monitoring equipment for Navy and Marine Corps	J	Navy	3.202	603542N
• **Countering Paramilitary/ Covert/Terrorist WMD Threats**					
- Joint Service Explosive Ordnance Disposal Systems	· Specialized EOD equipment and tools required for detection, location, and rendering safe of NBC munitions	E/I	Navy	4.803	603654N
	Total			**8.005**	

* Refer to Table 2.1 in text

Table C.5: Other Key U.S. Air Force Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Proliferation Prevention**					
- Treaty Verification Support	· Support of ongoing START verification efforts	M	Air Force	0.998	305145F
- Nuclear Detonation Detection System	· Detection of nuclear detonations, including test explosions	H	Air Force	16.277	305913F
• **Active Defense**					
- Theater Missile Defense	· Reflects Air Force participation in a joint Boost Phase Intercept ACTD with BMDO. Detection, location, and kill of critical mobile targets	O/P	Air Force	25.102	208060F
- Airborne Laser Technology	· Demonstrates all necessary technologies required for acquiring, tracking, and destroying Theater Ballistic Missiles in the boost phase. Adjunct studies of cruise missile defense, battle management/C4I, and surveillance.	O	Air Force	20.000	603319F
- Space Sensor and Satellite Communication Technology	· Sensor and communication technology required to support TMD	L	Air Force	3.700	603401F
	Total			**66.077**	

* Refer to Table 2.1 in text

Table C.6: Key BMDO Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• Active Defense					
- Support Technology Exploratory Development.	· Advanced mission research projects		BMDO	93.308	0602173C
- Support Technology ATD	· Sensor integration and testing, space surveillance support, missile propellant development, laser concepts		BMDO	79.387	0603173C
- THAAD System	· Conduct flight testing and DEMVAL program development		BMDO	576.327	0603861C
- Hawk	· Completes radar command post integration and testing for Hawk TBM modification		BMDO	23.188	0603863C
- TMD BM/C3	· BM/C3 integration, network testing and development		BMDO	24.231	0603864C
- TMD BM/C3 EMD	· Demonstrate Joint Service interoperability and system integration testing		BMDO	14.301	0604864C
- Navy Upper Tier	· Continues Navy theater-wide planning and studies		BMDO	30.442	0603868C
- Corps SAM	· Supports international teaming and project definition-validation of short range TBM and cruise missile defense systems.		BMDO	30.442	0603869C
- Boost Phase Intercept	· Develops kinetic kill vehicle for follow-on demonstration	O	BMDO	49.061	0603870C
- National Missile Defense	· System development, test and deployment planning for National Missile Defense		BMDO	370.621	0603871C
- Other TMD	· Development of technologies, components, and architectures		BMDO	460.470	0603872C
- PAC-3	· Continue missile EMD, remote launch, communications development, and testing		BMDO	247.921	0604864C
- PAC-3 Risk Reduction	· Risk reduction/mitigation for PAC-3 missile		BMDO	19.485	0604866C
- Navy Lower Tier	· Continue Aegis development, testing, and missile design		BMDO	237.473	0604867C
- Management	· Centralized support for technology, testing, integration, and administration of Active Defense		BMDO	185.542	0605218C
	Total			**2,442.199**	

* BMDO RDT&E programs support general active defense capabilities.

Table C.7: Key ARPA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• Proliferation Prevention					
- CTB Monitoring	· Seismic and nonseismic monitoring technology to verify nuclear test bans.	H	ARPA	14.100	602301E
• Active Defense					
- Air Defense Initiative	· Development of Mountain Top radar for defense against manned aircraft, cruise missiles, and theater ballistic missiles.	L/O	ARPA	45.600	603226E
- Enhanced Program for Cruise Missile Defense	· Supplements cruise missile defense program by providing additional sensor platforms and fire control capabilities	L	ARPA	57.000	603226E
• Counterforce					
- Critical Mobile Targets	· Simulation and R&D support to develop concepts to find and destroy mobile targets (War Breaker)	P	ARPA	135.103	603226E
	Total			**251.803**	

* Refer to Table 2.1 in text

Table C.8: Key DNA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• Proliferation Prevention					
- CWC Verification Technology	· RDT&E of technologies required for multi-national verification of the Chemical Weapons Convention (CWC), including inspection support.	A/I	DNA	12.612	603711H
- START I & II Verification Technology	· RDT&E of technologies to enable verification of nuclear weapons treaties, including non-intrusive detection of nuclear re-entry bodies	D/M	DNA	12.329	603711H
• Passive Defense					
- Test and Simulation Technology	· Simulators and simulator technology required to validate weapons systems operability in a nuclear environment	J	DNA	69.588	602715H
- Weapon Safety and Operational Support	· Force survivability assessments against nuclear weapons; counterproliferation training support	J	DNA	25.947	602715H
• Counterforce					
- Weapons Systems Lethality	· Lethality evaluations of weapons against fixed buried targets	C	DNA	46.165	602715H
	Total			**166.641**	

* Refer to Table 2.1 in text

** Supplemented by the Counterproliferation Support Program

Table C.9: Key OSD Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description and Objectives	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• Proliferation Prevention					
- Physical Security Equipment	· Development of equipment for protection of nuclear weapons.	D	All Services	20.190	603228D
• Countering Paramilitary/ Covert/Terrorist WMD Threats					
- Counterterror Technical Support	· TSWG/Hostage Rescue, capabilities related to CW/BW terrorist incidents	E/I	OSD	12.044	602222D
	Total			**32.234**	

* Refer to Table 2.1 in text

Table C.10: Key CTR Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description and Objectives	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• Proliferation Prevention					
- Destruction and Dismantlement	· Assistance to Former Soviet Union (FSU) destruction and dismantlement of nuclear weapons, strategic delivery systems, and chemical munitions.	D/M	ATSD(AE)	194.000	(O&M)
- Chain of Custody Programs	· Design and manufacture of fissile material containers, support for a Russian fissile material storage facility, and improvement of weapons security in the FSU	D/M	ATSD(AE)	71.500	(O&M)
- Demilitarization	· Support for conversion of defense related industry and demilitarization of the nuclear weapons industry through elimination of physical infrastructure such as physical plants, support systems, and materials.	D/M	ATSD(AE)	75.000	(O&M)
- Program Support and Misc. Support	· Training and exchange projects in the FSU to increase expertise in demilitarization; administrative and logistical support to other CTR areas.	D/M	ATSD(AE)	30.500	(O&M)
	Total			**371.000**	

* Refer to Table 2.1 in text

Table C.11: Key OSIA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description and Objectives	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
Proliferation Prevention					
- INF Treaty	· Inspections and inspection support under the terms of the Intermediate Range Nuclear Forces treaty	M	OSIA	14.857	(O&M)
- START Treaty	· Inspections and inspection support under the terms of the Strategic Arms Reductions Treaty	M	OSIA	18.069	(O&M)
- START II Treaty	· Planning and preparations for verification of the START II treaty	M	OSIA	3.254	(O&M)
- Nuclear Testing Treaties	· Inspection and inspection support of the Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty	H	OSIA	4.582	(O&M)
- Chemical Weapons Agreements	· Inspections and inspection support under the terms of various agreements on destruction and non-production of chemical weapons	G	OSIA	25.873	(O&M)
- Open Skies Treaty	· Inspections and inspection support under the terms of the Open Skies Treaty		OSIA	7.740	(O&M)
- Safeguards, Transparency, and Irreversibility (STI) Program	· Inspections and escort support associated with anticipated STI agreements	M	OSIA	5.053	(O&M)
- Other Programs	· OSIA support to miscellaneous agreements, including support of UNSCOM operations in Iraq	M	OSIA	5.171	(O&M)
	Total			**84.599**	

* Refer to Table 2.1 in text

Table C.12: Key DTSA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description and Objectives	Area for Prog.*	Agency	FY96 Budget [$M]	PE No.
• **Proliferation Prevention**					
- Critical Technologies	· Supports development and publication of Military Critical Technologies List. Identifies and assesses technologies and products which assist in proliferation of WMD.	D	DTSA	2.644	605110D
	Total			**2.644**	

* Refer to Table 2.1 in text

APPENDIX D

Planned FY 1996 Budget Profile for DOE Programs Related to Countering Proliferation

As reported in the 1994 NPRC Report, the DOE activities and associated funding can be matched to the specific counterproliferation functional areas. The funding profiles for DOE nonproliferation programs related to counterproliferation for FY 1996 are provided in Table D.1 below for each of the applicable functional areas.

Table D.1:
Planned FY 1996 Budget Profile for DOE Counterproliferation-Related Programs

Counterproliferation Functional Area	FY 1996 Budget [$M]
• Proliferation Prevention: Inspection Support	89.600
• Proliferation Prevention: Export Controls	16.077
• Strategic and Tactical Intelligence	See Intelligence Annex
• Passive Defense	18.900
• Counter-Paramilitary/Covert and Terrorist WMD Threats	34.000
• Technology Base	217.460
• Total:	**376.037**

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APPENDIX E

Listing of Abbreviations and Acronyms used in this Report

AARS	Advanced Airborne Radiac System
ACADA	Automatic Chemical Agent Alarm
ACC	Air Combat Command
ACDA	U.S. Arms Control and Disarmament Agency
ACEs	Areas for Capability Enhancements
ACPM	Aircrew Protective Mask
ACTD	Advanced Concept Technology Demonstration
AES	Airborne Emission Spectrometer
AICPS	Advanced Integrated Collective Protection System
AMPS	Airborne Multisensor Pod System
ARPA	Advanced Research Project Agency
ASD(ISP)	Assistant Secretary of Defense (International Security Policy)
ATD	Advanced Technology Demonstration
ATSD(AE)	Assistant to the Secretary of Defense for Atomic Energy
BADS	Biological Agent Detector System
BDA	Battle (or Bomb) Damage Assessment
BIDS	Biological Integrated Detection System
BM	Battle Management
BMDO	Ballistic Missile Defense Organization
BW	Biological Warfare/Biological Weapons
BWC	Biological Weapons Convention
CALIOPE	Chemical Analysis by Laser Interrogation of Proliferation Effluents
CBD	Chemical and Biological Defense
CBDCOM	U.S. Army Chemical and Biological Defense Command
CBR	Chemical, Biological and Radiological
CEC	Cooperative Engagement Controller
CIA	Central Intelligence Agency
CINC	Commander-in-Chief
COCO	Contractor Owned, Contractor Operated
CONUS	Continental United States
CMLS	U.S. Army Chemical School
CP	Counterproliferation
CPRC	Counterproliferation Program Review Committee
CTB	Comprehensive Test Ban
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction
CW	Chemical Warfare/Chemical Weapons
CWC	Chemical Weapons Convention

C^3I	Command, Control, Communications, and Intelligence
C^4I	Command, Control, Communications, Computers, and Intelligence
DAB	Defense Acquisition Board
DATSD(AE)(CP)	Deputy for Counterproliferation to the Assistant to the Secretary of Defense for Atomic Energy
DCI	Director of Central Intelligence
DDR&E	Director, Defense Research and Engineering
DEMVAL	Demonstration and Validation
DERP	Disposable Eye and Respiratory Protection
DNA	Defense Nuclear Agency
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOS	Department of State
DSB	Defense Science Board
DTSA	Defense Technology Security Agency
DUSD(A&T)	Deputy Under Secretary of Defense for Acquisition and Technology
EMD	Engineering and Manufacturing Development
EOD	Explosive Ordnance Disposal
ERDEC	Edgewood Research, Development, and Engineering Center (U.S. Army)
EUCOM	U.S. European Command
FBI	Federal Bureau of Investigation
FLIR	Forward Looking Infrared
FSU	Former Soviet Union (The following states: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kirgizia, Latvia, Lithuania, Moldova, Russia, Tadzhikstan, Turkmenistan, Ukraine, and Uzbekistan.)
FY	Fiscal Year
GPS	Global Positioning System
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HUMINT	Human Intelligence
IAEA	International Atomic Energy Agency
IBAD	Interim Biological Agent Detector
ICAM	Improved Chemical Agent Monitor
INTELL	U.S. Intelligence
INF	Intermediate Nuclear Forces (treaty)
IOC	Initial Operating Capability
IPDS	Improved Chemical Agent Point Detector System
IR	Infrared
ITAG	Interferometric Terrain Aided Guidance

JCS	Joint Chiefs of Staff
JMIP	Joint Military Intelligence Program
JPO-BD	Joint Program Office for Biological Defense
JROC	Joint Requirements Oversight Committee
JSLIST	Joint Services Lightweight Suit Technology
JSOC	Joint Special Operations Command
JTIDS	Joint Tactical Information Distribution Systems
JWCA	Joint Warfighting Capabilities Assessment
LANL	Los Alamos National Laboratory
Lidar	Light Detection and Ranging
LLNL	Lawrence Livermore National Laboratory
LR-BSDS	Long Range Biological Standoff Detection System
LSCAD	Lightweight Standoff Chemical Agent Detection System
LTBT	Limited Test Ban Treaty
MASINT	Measurement and Signature Intelligence
MDS	Modular Decontamination System
MEA	Munitions Effectiveness Analysis
MEADS	Medium Extended Air Defense System
MICAD	Multipurpose Integrated Chemical Agent Detector
MINATOM	Ministry of Atomic Energy (Russia)
MOU	Memorandum of Understanding
MPC&A	Material Protection, Control, and Accounting
NBC	Nuclear, Biological, and Chemical
NBCRS	Nuclear, Biological, and Chemical Reconnaissance System (XM93 Fox Vehicle)
NCA	National Command Authority
NDI	Non-Developmental Item
NDU	National Defense University
NEOD	Naval Explosive Ordnance Disposal
NEST	Nuclear Emergency Search Team
NFIP	National Foreign Intelligence Program
NIP	Nuclear Incident Program
NMD	National Missile Defense
NMMSS	Nuclear Materials Management and Safeguard System
NPC	Nonproliferation Center
NPRC	Nonproliferation Program Review Committee
NPT	Nonproliferation Treaty
NRE	Non-recurring Engineering
NRL	Naval Research Laboratory
NRO	National Reconnaissance Office
NSAS	National Spectroradiometric Assessment Studies

NSC	National Security Council
NUDET	Nuclear Detonation
OCONUS	Outside the Continental United States
O&M	Operations and Maintenance
OSD	Office of the Secretary of Defense
OSIA	On-Site Inspection Agency
PAC	Patriot Advanced Capability
PATS	Protection Assessment Test System
PDM	Program Decision Memorandum
PE	Program Element
POM	Program Objective Memorandum
Radiac	Radiation Detection, Indication, and Computation
RFP	Request for Proposals
RSCAAL	Remote Sensing Chemical Agent Alarm
RW	Radiological Weapon
R&D	Research and Development
RDT&E	Research, Development, Test, and Evaluation
SAFEGUARD	Scanning Airborne Fourier Emission for Gaseous Ultraspectral Analysis and Radiometric Detection
SAM	Surface-to-Air Missile
SCAMP	Shipborne CW Agent Detector
SEI	Specific Emitter Identification
SNL	Sandia National Laboratory
SNM	Special Nuclear Materials
SOCOM	Special Operations Command (also USSOCOM)
SOF	Special Operations Forces
SO/LIC	Special Operations/Low Intensity Conflict
STRATCOM	U.S. Strategic Command
SR-BSDS	Short Range Biological Standoff Detection System
START	Strategic Arms Reduction Treaty
STI	Safeguards, Tranparency and Irreversibility
TBD	To Be Determined
TBMD	Theater Ballistic Missile Defense
TEU	U.S. Army Technical Escort Unit
THAAD	Theater High Altitude Air Defense
TIARA	Tactical Intelligence and Related Activities
TIBS	Tactical Information Broadcast System
TICR	Technical Intelligence Collection Review
TMD	Theater Missile Defense
TWG	Technology Working Group

UAV	Unmanned Aerial Vehicle
UGS	Unattended Ground Sensor(s)
UNSCOM	United Nations Special Commission (Iraq)
US	United States
USA	United States Army
USACOM	United States Atlantic Command
USAF	United States Air Force
USD(A&T)	Under Secretary of Defense for Acquisition and Technology
USMC	United States Marine Corps
USN	United States Navy
USSOCOM	United States Special Operations Command
UV	Ultraviolet
WMD	Weapons of Mass Destruction

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