Report on Activities and Programs for Countering Proliferation

May 1996

Counterproliferation
Program
Review
Committee

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Executive Summary

Congress directed, in the 1995 National Defense Authorization Act, that the CPRC be established to review activities and programs related to countering proliferation within the Department of Defense (DoD), Department of Energy (DOE), U.S. Intelligence, and the Joint Chiefs of Staff (JCS). This high level national commitment to counter proliferation threats is reflected in the CPRC's membership. It is 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 (CJCS). The CPRC is chartered to make recommendations relative to modifications in programs required to address shortfalls in existing and programmed capabilities to counter the proliferation of weapons of mass destruction (WMD). The CPRC is also tasked to assess progress toward implementing its previous recommendations and the recommendations of its predecessor, the Nonproliferation Program Review Committee (NPRC). This report presents the findings and recommendations of the CPRC's annual review for 1996.

The recommendations of the 1994 NPRC report constitute an integrated, top level plan to improve the overall capability of the United States in countering WMD proliferation threats. The CPRC reviewed the progress in meeting the goals and objectives of this plan last year and recommended additional initiatives to improve the interdepartmental response to countering WMD proliferation threats. These recommendations included establishing a prioritized list of counterproliferation Areas for Capability Enhancements (ACEs). The ACEs define those priority areas where additional capabilities are required to meet the challenges posed by WMD proliferation threats. They prioritize the counterproliferation-related responses to interdepartmental policy needs and, in particular, reflect the operational requirements of the Unified Commands for countering proliferation. In fact, the counterproliferation ACEs combine the CPRC-endorsed NPRC "Areas for Progress" and the counterproliferation warfighting priorities of the Commanders-in-Chief (CINCs) of the Unified Commands. The ACEs, listed in Table 1, serve to guide the CPRC's program review process and are used as the basis to assess progress in meeting the counterproliferation and related nonproliferation mission needs of the CPRC-represented Departments.

Because several new initiatives have been undertaken since the CPRC/NPRC review process began, the time is right to evaluate the progress that has been made in enhancing the ability of the U.S. to respond to and counter WMD proliferation threats. Accordingly, the CPRC focused its review activities this year on examining key accomplishments in each ACE priority area. Although it will take several years to implement the full set of CPRC/NPRC recommendations, the CPRC can report that progress has been made over the past two years in many ACE priority areas. This progress has led to a strengthening of U.S. capabilities for countering proliferation. This strengthening includes the rapid fielding of essential capabilities, focused interdepartmental R&D activities, and improved integration, management, and oversight of programs related to countering proliferation.

Table 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

Commensurate with the seriousness of the threat, DoD, DOE, and U.S. Intelligence have each made serious commitments to enhance national capabilities to counter the proliferation of WMD. DoD investments in areas strongly related to counterproliferation total just under $4.3 billion for FY 1997, of which approximately $2.9 billion is for missile defense. This investment compares favorably with last year's investment of $3.8 billion, reflecting DoD's steady commitment in the face of increasing budget pressures. It must be emphasized that this investment leverages the substantial investments made in maintaining the requisite military forces and defense infrastructure necessary to provide for the common defense of the United States. DoD budgets the bulk of its counterproliferation investment in theater and national missile defense (ACE priorities 2 and 3); detection and characterization of chemical and biological warfare (CW/BW) agents (ACE priority 1); maintaining a robust nuclear, biological, and chemical (NBC) passive defense capability (ACE priority 6); prompt mobile target detection and defeat (ACE priority 11); and supporting inspection and monitoring activities of verifiable arms control agreements (ACE priority 15).

DOE has increased its investments in nonproliferation activities for FY 1997 to $411.5 million, up 5.5% over last year. DOE focuses its efforts on supporting the inspection and monitoring of arms control agreements (ACE priority 15), defending against covert delivery and terrorist threats (ACE priority 13), and the tracking and control of nuclear materials (ACE priorities 10 and 14), in addition to supporting core national nonproliferation activities. U.S.

Intelligence's investments in programs to counter proliferation are discussed in an "Intelligence Annex" to this report (bound separately).

Since the May 1995 CPRC report was submitted, the following initiatives have been undertaken and accomplishments achieved by DoD, DOE, and U.S. Intelligence to enhance the interdepartmental response to countering WMD proliferation threats.

DoD Accomplishments

- ***DoD's Counterproliferation Initiative and the Counterproliferation Support Program.*** The Counterproliferation Initiative is DoD's Department-wide effort to meet the military challenges posed by the proliferation of WMD, including the preparations necessary to conduct successful military operations in an NBC environment. At the heart of the Initiative is the Counterproliferation Support Program established specifically to address DoD shortfalls in counterproliferation capabilities. This program, managed by the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD(NCB)), uses its budget to leverage DoD acquisition programs to meet the counterproliferation priorities of the CINCs and accelerate the deployment of enhanced capabilities to the field. Currently, the Counterproliferation Support Program is targeting 8 of the 15 ACEs where leveraged support can be decisive. The Counterproliferation Support Program also conducts technology development activities at the DOE National Laboratories on a Work for Others basis under a joint DoD/DOE Memorandum of Understanding.

- ***DoD Counterproliferation Implementation Directive.*** A DoD Directive has been developed to codify the progress made to date in implementing the Counterproliferation Initiative and to guide the Department's future work. The Directive identifies specific responsibilities, formalizes relationships among DoD organizations, and establishes common terms of reference.

- ***Establishment of the Counterproliferation Council.*** To ensure that DoD's implementation of the Counterproliferation Initiative is integrated and focused, DoD has established a Counterproliferation Council, chaired by the Deputy Secretary of Defense and composed of senior DoD and Joint Staff officials, to review Departmental progress in meeting counterproliferation objectives.

- ***CINC Counterproliferation and Planning Activities.*** In May 1995 the Secretary of Defense approved the CJCS's *Missions and Functions Study*. It concluded that each geographic CINC should be responsible for executing U.S. counterproliferation policy within his area of responsibility, and that its implementation would be executed via each CINC's standard deliberate planning process. Based on this study, the Secretary of Defense directed that a *Counterproliferation Charter* be developed to supplement top-level policy guidance and provide a military focus with respect to the counterproliferation mission. The CJCS subsequently issued a *Counterproliferation 0400 CONPLAN* which further defines national level counterproliferation policy in terms of operational objectives and tasks that will assist the CINCs in developing their area-specific plans.

- ***Ongoing Review of Joint NBC Defense and Counterproliferation Programs.*** The Deputy Secretary of Defense directed a joint review of all DoD counterproliferation-related programs to assess programmatic alternatives and priorities, policy impacts, CINC requirements, and management alternatives. The goal of this study, which is scheduled to be completed by 30 June 1996, is to define a restructured acquisition program that meets the CINCs' counterproliferation mission needs. The results of this study will be incorporated during the FY 1998 - 2003 program budget review process.

- ***DoD's Biological Defense BW Vaccine Acquisition Program.*** The need to produce vaccines at a pace rapid enough to match any anticipated battlefield demand is a high CPRC and CINC priority. Significant progress has been made in developing a BW vaccine production program, and a solid acquisition strategy, based on comprehensive analyses, is in place. A Request for Proposals will be released to industry this fiscal year to select a prime systems contractor, and contract award is anticipated for the first quarter of FY 1997.

- ***New DoD Initiatives to Counter Paramilitary, Covert Delivery, and Terrorist WMD Threats.*** The ATSD(NCB) recently signed a Memorandum of Agreement with the U.S. Special Operations Command (USSOCOM), and a similar agreement is being formalized between the Counterproliferation Support Program and the Office of the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict. These agreements will facilitate closer cooperation among the organizations and improve DoD's acquisition response in meeting the requirements of CINC SOCOM, DoD, and interagency organizations to counter threats from WMD-armed terrorists and covert and paramilitary forces. These agreements focus on accelerating and adapting technologies in BW/CW defense for use by special operations forces and other units to address critical technology shortfalls.

- ***The Hard and/or Deeply Buried Target Defeat Capability Integrated Product Team.*** The concept exploration phase of this Joint Service DoD acquisition effort has been established to demonstrate concepts for the defeat of hard and/or deeply buried targets — a key ACE priority. The concept collection process is underway, and concept proposals from industry will be formally received in May. The effort is coordinated through an Integrated Product Team.

- ***Science and Technology Strategic Planning for Counterproliferation.*** The strategic planning process for DoD's science and technology (S&T) program was enhanced this year with the issuance of the *Joint Warfighting S&T Plan*. BW/CW detection and counterproliferation are two of the 12 Joint Warfighting Capability Objectives identified in the plan. The *Joint Warfighting S&T Plan* will be issued annually as Defense Guidance, and its Joint Warfare Capability Objectives will receive funding priority in DoD's Future Years Defense Program.

- ***Reorganization of the Militarily Critical Technologies List.*** Starting this year, *The Militarily Critical Technologies List*, the primary source document identifying leading edge military and dual-use technologies for proliferation control, is being divided into three parts, each focusing on a critical technology area. Part 2, entitled *Weapons of Mass Destruction*, will provide a detailed

listing, with detailed technical performance parameters, of those technologies required for the production of WMD and their means of delivery. Parts 1 and 3 are entitled *Weapons Systems Technology* and *Critical Emerging Technologies*, respectively.

- ***Establishment of a DoD Deputy for Nuclear Treaty Programs.*** To prepare for the future implementation of the Comprehensive Test Ban Treaty (CTBT), a new Deputy for Nuclear Treaty Programs has been established reporting to the ATSD(NCB). The broad mission of this position is to oversee DoD activities related to the implementation and compliance verification of the CTBT.

- ***Restructuring of Passive Defense Program Oversight.*** Starting in FY 1997, Counterproliferation Support Program projects leveraging Chemical and Biological Defense Program projects in NBC individual and collective protection and BW/CW point detection will be transferred to the Chemical and Biological Defense Program, which oversees and coordinates all DoD programs in passive defense. Chemical and Biological Defense Program projects in long range standoff BW detection will be transferred to the Counterproliferation Support Program. This restructuring will improve and streamline management oversight responsibilities.

- ***Key Programmatic Accomplishments.*** Well over 100 DoD programs are strongly supporting national efforts to counter WMD proliferation threats. Over the past two years, substantial progress has been made by these programs to improve fielded counterproliferation and nonproliferation capabilities and to establish the necessary groundwork for continuing advances. A few, selected programmatic accomplishments are summarized in Table 2 below. A more detailed description of the programmatic accomplishments may be found in the main body of the report and in the Intelligence Annex.

DOE Accomplishments

- ***Detecting and Characterizing Worldwide Production of Nuclear Materials and Weapons.*** Under its production detection program, DOE is developing a set of both remote and on-site complementary tools to detect and characterize foreign nuclear materials production activities. This capability serves as a powerful deterrent to proliferation.

- ***Monitoring Worldwide Nuclear Testing.*** DOE experience in developing and deploying, in conjunction with DoD, systems to monitor the Limited Test Ban Treaty and the Threshold Test Ban Treaty has been refocused recently on verifying and monitoring the CTBT. DOE is developing and delivering elements of a U.S. National Technical Means as well as international monitoring systems for this purpose.

- ***Securing Nuclear Materials in Russia and the Newly Independent States.*** DOE has been very successful in coordinating technical expert interactions at the government-to-government and the

Table 2: DoD's Programmatic Response to the Counterproliferation ACEs

Counterproliferation ACE	Selected Accomplishments in DoD Counterproliferation Programs
1. Detection, Identification, and Characterization of BW/CW Agents	• Deployed the Biological Integrated Detection System and activated a contingency BIDS platoon, providing U.S. forces with a fielded BW detection capability • Continued deployment of critical CW agent detection systems • Accelerated development of remote BW agent detection systems
2. Cruise Missile Defense	• Provided radar hardware for the "Mountain Top" cruise missile defense demonstration • Technology sharing and synergy with ballistic missile defense programs
3. Theater Ballistic Missile Defense	• Completed 5 Theater High Altitude Area Defense system flight tests • Completed initial flight demonstrations of Navy Theater-Wide System • Conducted initial lethality testing of Navy Area Defense System • Demonstrated enhanced laser power for Airborne Laser boost phase intercept system and prepared for demonstration and validation • Completed Statement of Intent with European partners for the Medium Extended Air Defense System • Shifted National Missile Defense from technology readiness to 3 year deployment readiness • Flight qualified 23 sensor and detector technologies for ballistic and cruise missile defense
4. Detection, Characterization, and Defeat of Underground WMD Facilities	• Conducted field tests of underground WMD facility defeat and collateral effects mitigation in support of the Counterproliferation ACTD
5. Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter	• See Intelligence Annex
6. Robust Passive Defense to Enable Continued Operations on the NBC Battlefield	• Continued deployment of critical NBC battlefield detection and warning systems and individual and collective protection systems • Considerable advances in BW/CW medical defense R&D
7. BW Vaccine RDT&E and Production to Ensure Availability	• Decided on a prime systems contractor acquisition approach to BW vaccine production and released a draft Request for Proposals for industry comment • Began production of anthrax vaccine to meet DoD stockpile needs and screened several BW vaccines for safety and efficacy
8. Target Planning for WMD Targets	• Deployed prototype integrated target planning tools to CINC USEUCOM for use in Bosnia as part of Operation Joint Endeavor
9. BW/CW Agent Defeat	• Conducted initial phenomenology tests as part of the Counterproliferation ACTD (Phase I)
10. Detection and Tracking of WMD and WMD-Related Shipments	• Initiated deployment of prototype Specific Emitter Identification System for tracking ships at sea
11. Prompt Mobile Target Detection and Defeat	• Conducted tests of advanced radars and other sensors for mobile target detection • Demonstrated functionality of C4I systems for rapid dissemination of intelligence to users
12. Support for Special Operations Forces (SOF)	• Continued development of specialized equipment and prototypes for rapid fielding • Conducted joint training exercises dealing with counter-WMD-related missions • Establishing the USMC Chemical/Biological Incident Response Force
13. Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	• Accelerated development of technologies, prototype systems, and specialized equipment to assist SOF and Explosive Ordnance Disposal teams in countering BW/CW threats • Enhanced coordination of Joint Service exercises and readiness sustainment activities
14. Support Export Control Activities of the U.S. Government	• Revised U.S. Export Administration Regulations and reviewed over 10,000 export license application for military and dual-use technologies
15. Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes	• Supported removal and return of all nuclear warheads from Kazakstan to Russia • Secured withdrawal of 63 of 81 SS-25 mobile ICBMs and launchers from Belarus to Russia • Deactivated all SS-24 and half of the SS-19 ICBMs in Ukraine • Established 17 joint business ventures between U.S. companies and FSU defense enterprises • Transitioned over 11,500 FSU scientists and engineers formerly employed in WMD production to more peaceful civilian employment • Continued inspection, monitoring, and escort support for nuclear and chemical weapons arms control treaties • Continued development of a global continuous threshold monitoring network and data fusion knowledge base for CTBT verification

laboratory-to-laboratory levels between U.S. and former Soviet Union (FSU) states to implement upgraded fissile material security procedures and technologies. Under the Materials Protection, Control, and Accounting Program (MPC&A), DOE is working to install modern safeguards equipment and provide technical training at over 35 facilities throughout the Russian Federation and the Newly Independent States (NIS). In June 1995, DOE entered into a cooperative agreement with the Russian Federal Nuclear Radiation and Safety Authority to implement a Russian state system for MPC&A. Starting with one site involving 75 kilograms of highly enriched uranium in 1994, the program achieved MPC&A upgrades for over eight tons of plutonium and highly enriched uranium at 26 facilities in 1995, and in 1996 hundreds of tons of nuclear material at over 40 facilities will be involved. This intense activity is expected to continue in FY 1997 at the 17 facilities added during the last six months, and as additional locations are negotiated for inclusion.

- ***The Industrial Partnering Program with Russia/NIS.*** Under this program DOE national laboratories work with Russian and NIS institutes to identify and evaluate the commercial potential of indigenous R&D capabilities. Partnerships, preferably through cost-sharing relationships with U.S. industry, are then facilitated to develop specific commercial products. To date, over 200 projects have been initiated, engaging over 2,000 former weapons scientists and engineers.

- ***Controlling Nuclear Exports.*** DOE has developed and is enhancing a proliferation information network to provide proliferation analysis and technical information to support the technical evaluation of export license applications. In addition, DOE has developed and begun implementing an integrated export control plan for Russia/NIS that utilizes, to the extent possible, the indigenous scientific and industrial base. Its main goal is to assist Russia/NIS in stemming the illicit flow of nuclear and nuclear-related dual-use commodities, materials, and technologies.

- ***Strengthening the Nuclear Nonproliferation Regime.*** DOE is promoting a stronger nuclear nonproliferation regime on several fronts by: supporting negotiations to stabilize spent fuel from the research reactor at Nyongbyon, North Korea; conducting technical workshops with Chinese scientists on arms control issues; increasing engagement with Middle Eastern states; engaging Indian and Pakistani scientists on regional verification issues; and providing continued support to the International Atomic Energy Agency in implementing strengthened safeguards measures.

- ***Nuclear Emergency and Terrorism Response.*** DOE maintains several emergency response assets postured to respond to events that may occur should proliferation prevention efforts fail. The emergency response asset with primary responsibility for responding to nuclear terrorism incidents is the Nuclear Emergency Search Team. The DOE also conducts threat analyses regarding nuclear terrorism as part of its nuclear emergency planning responsibilities.

U.S. Intelligence Accomplishments

- ***Intelligence Community Support for Counterproliferation.*** The CJCS's *Missions and Functions Study* (described above) evaluated and made a series of recommendations concerning Intelligence Community support for counterproliferation. Following up on these recommendations the DCI's Nonproliferation Center developed an *Action Plan* which outlines how the Center will work with the J-2 (Intelligence) and the Defense Intelligence Agency (DIA) in support of the Unified Combatant Commands, and DIA's Office of Counterproliferation, Nuclear, Biological, and Chemical Assessments (the J-2's Executive Agent for counterproliferation issues) developed a *Military Intelligence Action Plan*, which was approved by the CJCS.

- ***Strategic Planning Process.*** U.S. Intelligence has instituted a corporate strategic and evaluation planning process to support efforts to counter proliferation. This ongoing process contributes to the National Needs Process and the National Foreign Intelligence Program, the Joint Military Intelligence Program, and the Tactical Intelligence and Related Activities Program and Planning Guidance. A major benefit of this effort has been the placement of a significant number of DoD personnel within the DCI's Nonproliferation Center. This has helped integrate intelligence support into DoD counterproliferation needs and actions. U.S. Intelligence also has expanded its relations with law enforcement officials. The U.S. Customs Service, for example, has assigned a senior agent to the Nonproliferation Center to assist in developing joint initiatives.

- ***Operational Planning Process.*** DIA is linking counterproliferation intelligence production more directly to the CINCs' deliberate planning process. DIA is taking guidance from the Joint Strategic Capabilities Plan and direction from the Commands' J-2s, J-3s (Operations), and J-5s (Plans and Policy) to allow U.S. Intelligence to more clearly define and satisfy the intelligence requirements needed to support CINC counterproliferation contingency planning and operations.

- ***Intelligence Successes.*** Many of U.S. Intelligence's successes cannot be described in this unclassified setting. However, some that can be described include:

  - Support to State Department efforts to provide actionable intelligence to the United Nations Special Commission inspection and monitoring efforts in Iraq;
  - Support to U.S. diplomatic discussions with South Africa concerning adherence to the nuclear Nonproliferation Treaty;
  - Development of a list of indicators to alert collectors and analysts that CW and BW are about to be used; similar initiatives are also under way to provide early warning alerts for the possible diversion of nuclear materials;
  - Establishment of a Southern Tier Study Group designed to focus on all WMD-related proliferation issues in the southern tier of the FSU; and
  - Support to Congressional committees, including a report that reviewed and evaluated nonproliferation programs in the National Foreign Intelligence Program FY 1996 budget submission.

Findings and Recommendations

The CPRC finds, as evidenced by the numerous accomplishments cited above and in the main body of the report, that the seriousness of the WMD proliferation threat and the need to enhance capabilities to counter it are recognized throughout the DoD, the Joint Staff (as well as the Services and CINCs), the DOE, and U.S. Intelligence. Indeed, "countering proliferation" has now become an established and institutionalized priority within each of the CPRC-represented Departments. Its visibility as a priority area has been advanced considerably by the President's declaration of a national emergency to deal with the WMD proliferation threat. Much has been done, but much remains to do. Moreover, as the decision makers, policy makers, and warfighters continue to reprioritize their nonproliferation and counterproliferation needs, the CPRC will continue to review counterproliferation-related DoD, DOE, and U.S. Intelligence programs to ensure that these programs continue to meet their evolving needs. The CPRC's recommendations for 1996 are summarized in Figure 1 and discussed below.

The FY 1997 President's budget, submitted to Congress in March 1996, addresses priority programs for countering proliferation. *Therefore, the CPRC recommends that the FY 1997 President's budget for each of the CPRC-represented Departments 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 1997 budget will continue to produce substantial progress in U.S. capabilities to address WMD proliferation, areas of capability shortfall will remain after FY 1997. *Therefore, it is the intention of the CPRC to continue the CPRC program review process beyond its congressionally mandated 1996 term.*

In light of the CPRC's finding that the need to enhance our national capabilities to counter proliferation has become established and institutionalized within the DoD, DOE, U.S. Intelligence, and the Joint Staff, the CPRC has not identified specific programmatic options this year for FY 1998. The CPRC expects the normal budget development processes of each CPRC-represented Department to be adequate to ensure a robust, integrated program for countering proliferation. *Therefore, the CPRC directs each represented Department to continue to address nonproliferation and counterproliferation needs and requirements as a high priority item in their FY 1998 budget development processes.*

To continue the record of interdepartmental achievement through an integrated response to meeting the counterproliferation ACE priorities, *the CPRC recommends a continuation of the close coordination of counterproliferation-related research, development, testing, and evaluation (RDT&E) and procurement programs and activities among the DoD, DOE, and U.S. Intelligence.*

In order to better access and utilize and more efficiently leverage existing technical expertise in the chemical and biological sciences resident in the DOE laboratories to support enhanced technology development and rapid fielding of advanced capabilities for CW/BW defense, *the CPRC*

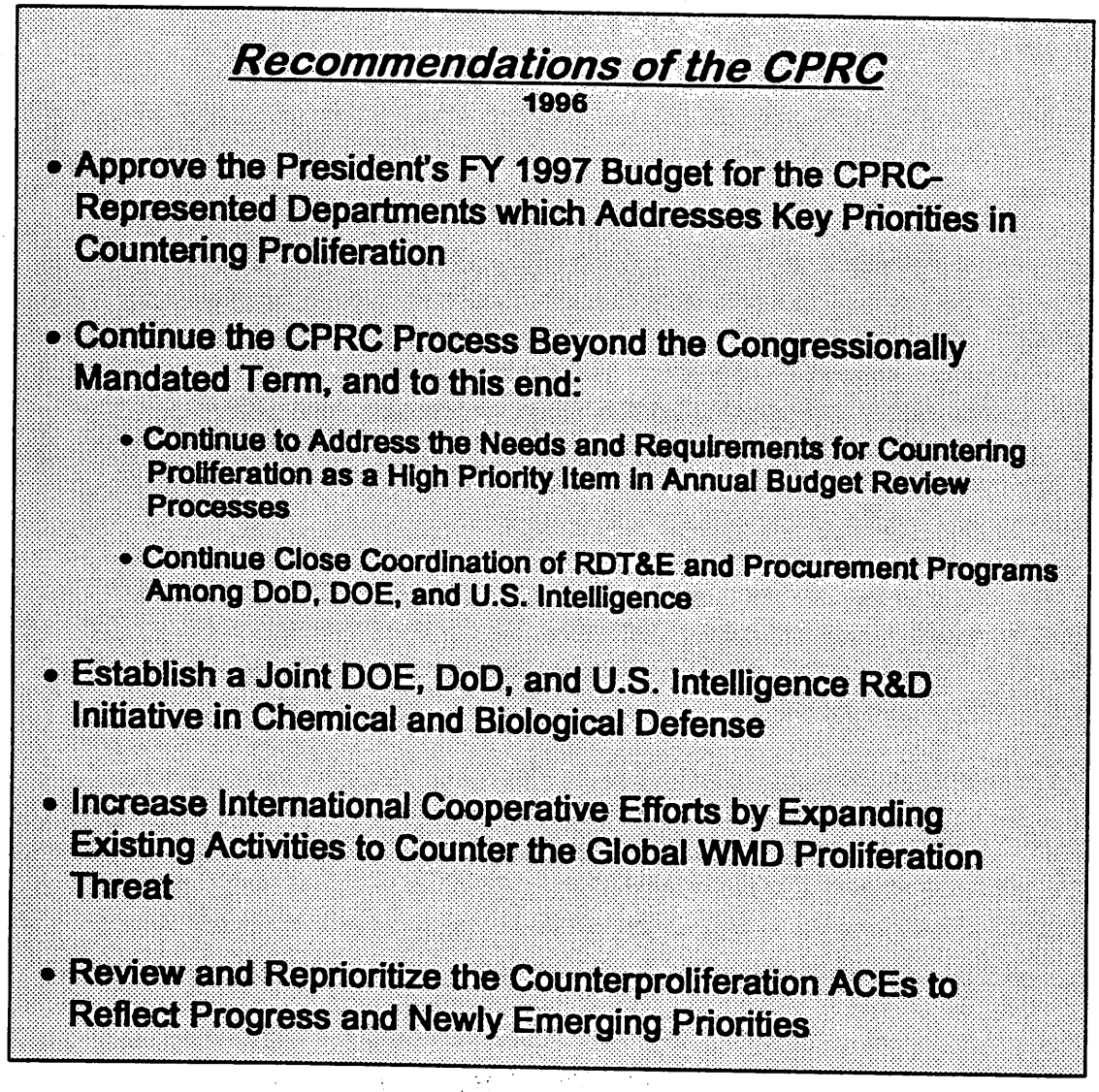

Figure 1. CPRC Recommendations for 1996

recommends that DOE, DoD, and U.S. Intelligence establish a joint R&D initiative in CW/BW Defense. A joint long term R&D plan will be developed for CPRC review to implement this recommendation.

Recognizing the global nature of WMD proliferation threats, *the CPRC recommends increasing international cooperative efforts to counter these threats by expanding existing activities in R&D, proliferation prevention, and counterterrorism being conducted by DoD, DOE, and U.S. Intelligence.* To expedite and more efficiently and effectively meet the challenges posed by this global problem, the CPRC further encourages and endorses cooperation with our international partners through conferences and joint programs.

In light of the ongoing reviews of CINC requirements and national counterterrorism capabilities, the CPRC will review the counterproliferation ACEs in October 1996 and reprioritize them as required based on the outcome of these reviews. Lastly, in view of the growing recognition of WMD terrorism as a significant national security threat, the CPRC believes that the current ACE priority 13, "Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats", should be elevated in priority when the ACE priority list is revised. This reprioritization will ensure that the counterproliferation ACEs continue to reflect the integration of CINC warfighting priorities and the overarching national security objectives they support. This ACE reprioritization will serve to improve the focus of future programmatic and managerial efforts to counter the threat of WMD proliferation.

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1. Introduction and Overview

1.1 Description and Purpose of the CPRC

This report is the second annual report of the Counterproliferation Program Review Committee (CPRC) chartered to report on the activities and programs of the Department of Defense (DoD), Department of Energy (DOE), Joint Chiefs of Staff (JCS), and U.S. Intelligence (US INTELL) to enhance the capabilities of the United States to counter the proliferation of nuclear, biological, and chemical weapons of mass destruction and the means to deliver them.

1.1.1 The CPRC. Section 1605 of the Fiscal Year (FY) 1994 National Defense Authorization Act (NDAA) established the Nonproliferation Program Review Committee (NPRC) and directed DoD to lead an interagency study of nonproliferation activities underway in Executive Branch agencies. The NPRC 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 of Defense Perry's request). Congress modified the charter of the NPRC in Section 1502 of the FY 1995 NDAA and established the CPRC to replace the NPRC.

Congress specified that the CPRC be composed of the Secretary of Defense (as Chairman), the Secretary of Energy (as Vice Chairman), the Director of Central Intelligence (DCI), and the Chairman of the Joint Chiefs of Staff (CJCS). 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 again this year, and the Secretary of Energy has designated the Deputy Secretary of Energy responsible for national security programs to serve as Vice Chairman. Senior level representatives from the JCS and U.S. Intelligence round out this year's CPRC. Excerpts from the congressional language establishing the CPRC are contained in Appendix A of this report, and a listing of the CPRC principals and working level review participants is provided in Appendix B.

Congress directed the CPRC to "identify and review existing and proposed capabilities and technologies for support of U.S. nonproliferation and counterproliferation policy." This year the CPRC has decided in this report to examine the accomplishments of the various nonproliferation and counterproliferation programs and initiatives established over the past two years. Because several new initiatives have been established since the original 1994 NPRC Report to Congress, now is an appropriate time to evaluate and report on the integrated progress of the interdepartmental response to enhancing the ability of the United States to respond to and counter the proliferation of weapons of mass destruction (WMD).

1.1.2 CPRC Report Requirements. Congress directed the Secretary of Defense to submit to Congress, not later than May 1, 1996, 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 that request.

1.2 Definitions and Objectives

1.2.1 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. In this report, the term "WMD" is meant to include NBC weapons. Their supporting infrastructure elements and their delivery systems, in particular cruise and ballistic missiles, are also considered in this report. 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. DoD's specific responsibilities, referred to as "counterproliferation", span the spectrum from military operations to diplomatic efforts and include: support of proliferation prevention and intelligence activities, deterring the use of NBC weapons, defending against NBC weapons, protecting against their effects, and maintaining a robust capability to find and destroy NBC weapon delivery forces and their supporting infrastructure elements with minimum collateral effects, should this become necessary. The DOE's responsibility with regard to the proliferation of WMD primarily includes activities and programs in nuclear proliferation prevention, intelligence support, treaty verification, and technology research and development (R&D) to support these responsibilities. The activities and programs of U.S. Intelligence summarized in this report address the broader intelligence efforts necessary to prevent, detect, and react to the proliferation of WMD.

1.2.2 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 may not be 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 Departments 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 Contingency 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 1.1 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, 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 the 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;

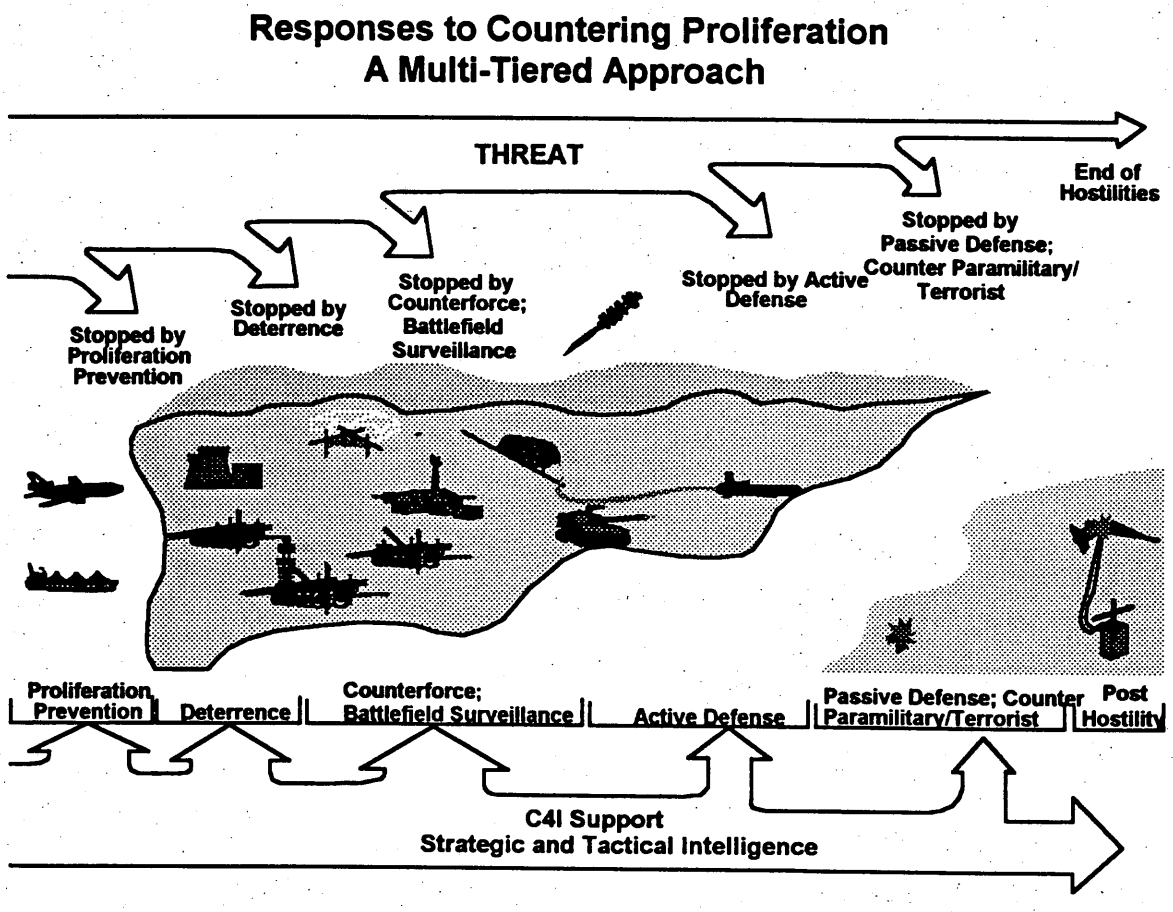

Figure 1.1 Countering Proliferation: A Multi-Tiered Approach

- ***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 WMD 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 NBC warheads delivered by ballistic and cruise missiles, while minimizing collateral effects that might arise during all phases of intercept;

- ***Passive Defense*** -- to protect U.S., allied, and coalition forces 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 Delivery, 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 abroad.

To the extent possible, the DoD, DOE, and U.S. Intelligence program descriptions provided in Sections 4 - 6 will be grouped according to these seven functional areas.

1.2.3 Operational Objectives. To meet mission objectives for countering proliferation and ensure that related interdepartmental research, development, testing, and evaluation (RDT&E) activities lead to acquisition programs and deployed capabilities that satisfy the requirements of the combatant commanders, operational objectives were identified by the CPRC last year and are listed in Table 1.1 for each counterproliferation functional area. Where shortfalls were identified, NPRC/CPRC-endorsed 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.

1.3 Scope of Programs Considered by the CPRC

The Counterproliferation Areas for Capability Enhancements (ACEs). This report focuses on identifying and describing those DoD, DOE, and U.S. Intelligence activities and programs which support the counterproliferation Areas for Capability Enhancements (ACEs) identified last year by the CPRC. The counterproliferation ACEs serve to summarize and prioritize the interdepartmental policy needs and operational requirements for countering proliferation, and,

Table 1.1: 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
• WMD Counterforce	• Time Urgent Response • Prompt Targeting and Strike/Restrike 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, Accurate NBC Agent Detection, Identification, and Early Warning • Individual and Collective Protection and Decontamination that Minimize Performance Degradation, Casualties, and Operational and Logistical Impacts • Availability of Effective BW Vaccines
• Countering Paramilitary, Covert Delivery, and Terrorist WMD Threats	• Joint DoD Readiness against WMD Threats in the U.S. and Overseas • Prompt, Effective World-Wide Response

in particular, the mission fulfillment needs of the military Commanders-in-Chief (CINCs). In fact, the prioritization of the counterproliferation ACEs follows closely that of the CINCs' prioritization of counterproliferation capabilities established last year as part of the Deterrence/ Counterproliferation Joint Warfighting Capabilities Assessment (JWCA) defined by the Joint Requirements Oversight Council (JROC). The CPRC uses the counterproliferation ACEs as the basis for its program reviews and to assess progress in meeting counterproliferation and related nonproliferation mission needs. The fifteen counterproliferation ACEs are listed in Table 1.2. The origin of the counterproliferation ACEs is discussed in more detail in Section 3.1.

Programs Strongly Related to Countering Proliferation. The CPRC defines programs "strongly related to countering proliferation" as those programs: 1) addressing the counterproliferation ACEs; and 2) that if eliminated, would necessitate significant modification of the NPRC/CPRC endorsed initiatives to achieve the recommended improvements in capabilities outlined in the 1994 NPRC and 1995 CPRC reports. These include: 1) DoD, DOE, and U.S. Intelligence initiatives established and implemented consistent with NPRC and CPRC recommendations (e.g., the Counterproliferation Support Program); and 2) other programs strongly related to countering proliferation which are directly related to the counterproliferation ACEs (e.g., the Chemical and Biological Defense Program).

Table 1.2: 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

It should be noted that general purpose defense 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. Such acquisition programs would still continue largely unaffected should NBC threats suddenly disappear. Existing and ongoing DoD programs strongly related to countering proliferation include: programs in NBC passive defense; counterforce against fixed and mobile WMD targets and collateral effects mitigation; programs to counter paramilitary, covert delivery, and terrorist WMD threats; ballistic and cruise missile defense RDT&E (including collateral effects mitigation); export control of military and dual-use technologies; and arms control treaty compliance verification. There are several DOE and U.S. Intelligence programs, described in this report, which are directly related to the counterproliferation ACEs.

In general, the NPRC/CPRC-endorsed initiatives leverage and augment existing and ongoing programs in order to accelerate program deliverables. DoD's Counterproliferation Support Program, established in direct response to a 1994 NPRC recommendation and endorsed by the CPRC, is one example of an NPRC/CPRC initiative designed to accelerate the RDT&E and fielding of several ongoing DoD programs and their deliverables. For example, one of the areas of most concern to the NPRC/CPRC has been the lack of deployed capabilities to detect, identify, and

provide timely warning of the presence of biological weapons (BW) agents on the battlefield. In response, the Counterproliferation Support Program is providing enhanced funding and management oversight in conjunction with DoD's Chemical and Biological Defense Program to accelerate the deployment of critical standoff and remote BW detection and characterization systems. In another area of significant concern to the NPRC/CPRC, the Counterproliferation Support Program is supporting the accelerated development of a new generation of WMD target defeat and collateral effects prediction and mitigation capabilities that are being demonstrated as part of the ongoing Counterproliferation Advanced Concept Technology Demonstration (ACTD).

1.4 Organization of the Report

The remainder of the report is organized as follows. Section 2 provides an overview of the worldwide WMD proliferation threat. Section 3 is devoted to a review of the 1995 CPRC findings and recommendations, including a summary of the origin of the Counterproliferation ACEs along with an overview of the DoD, DOE, and U.S. Intelligence investments in addressing them. Section 4 provides detailed descriptions of the DoD programs and activities which are strongly related to countering proliferation and that directly address the counterproliferation ACEs. Specific program accomplishments are highlighted. DoD policy perspectives, CINC priorities, and Joint Staff activities related to counterproliferation are also discussed in this section, along with new developments since the 1995 CPRC report was issued. DOE nonproliferation programs related to countering proliferation are described, and their accomplishments discussed, in Section 5. U.S. Intelligence programs and activities to counter proliferation are briefly described in Section 6, with the details provided in an "Intelligence Annex" to this report (separately bound). The findings and recommendations of the CPRC are contained in Section 7, which summarizes the integrated interdepartmental response for countering proliferation and discusses both management and programmatic initiatives for continued progress in addressing WMD proliferation threats.

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 review participants; Appendix C provides tabular summaries of DoD programs strongly related to counterproliferation, including key program accomplishments, milestones, and budget profiles for FY 1997; 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 by U.S. Intelligence to describe U.S. Intelligence, DoD, and DOE intelligence programs related to countering proliferation.

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2. The Continuing Threat of WMD Proliferation

2.1 Introduction: Scope of the Problem

Of the many international dangers that have emerged in recent years to confront the U.S., few have more serious and far-reaching implications for security and stability than the worldwide proliferation of weapons of mass destruction — nuclear, biological, and chemical weapons — and their missile delivery systems. The problem, as illustrated in Figure 2.1, is global — politically, economically, militarily, and technologically. It involves some of the largest, smallest, richest, and poorest countries, and those led by some of the most reactionary and unstable regimes.

At least 20 countries — some of them hostile to the United States — already have or may be developing WMD or missile delivery systems. Others are heavily engaged in the sale or transfer of WMD technology. Some of these countries are clearly willing to use WMD, and some have. Chemical and/or biological weapons are believed to have been used in recent conflicts. More recently, as the Tokyo subway incident shows, terrorist attacks using chemical weapons agents have suddenly become a reality. The WMD problem is serious and growing.

The Cold War, and the period of stability which accompanied global deterrence, is over. Unstable regimes, shifting regional power balances, and terrorism dominate the landscape today. The potential for catastrophic use of these weapons is higher than it has been in many decades. Intelligence on the potential use of WMD is crucial in efforts to control emerging WMD crises or avoid imminent disasters.

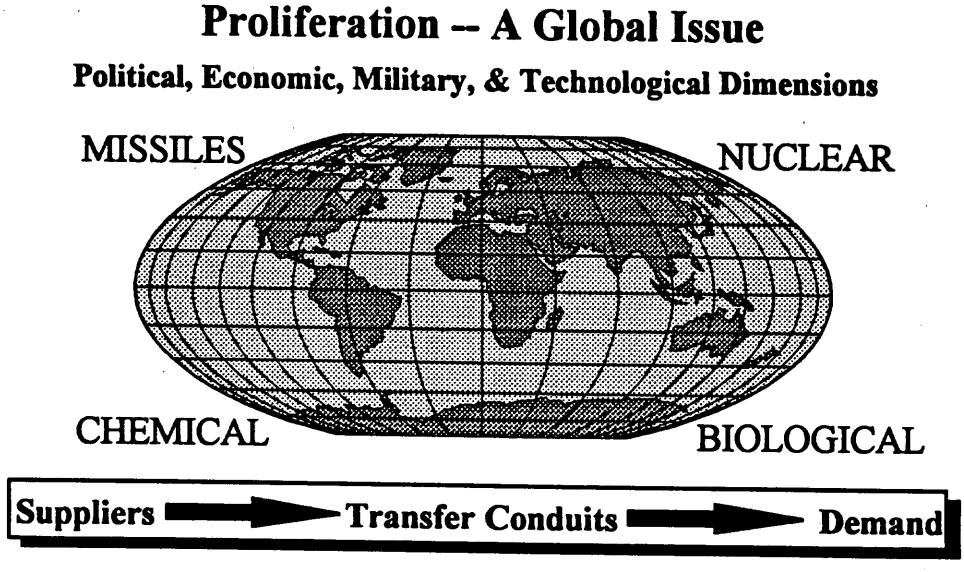

Figure 2.1. Proliferation — A Global Problem

In the event that the use of force becomes necessary, military and emergency forces are being equipped and trained to operate in a WMD environment. The success of such efforts depends heavily on intelligence to identify the specific threats forces will face at a given location and time. The potential for rapid proliferation of sophisticated biological and chemical capabilities makes this problem even more urgent today. In order to combat the WMD threat, U.S. and allied forces must know the characteristics of that threat *very well*. Military intelligence needs are specific and detailed, with a high premium on rapid delivery of analytical products in an operational environment.

In recognition of the serious threat posed by WMD proliferation, U.S. Intelligence has developed, and is implementing, a strategic plan which draws on the resources of the entire Intelligence Community. These intelligence activities are closely coordinated with activities in the policy, defense, and law enforcement communities. In many cases, the activities are joint. The goal is to provide policy makers with the intelligence support they need to:

- Prevent the acquisition of WMD — and of related technology and technical insight — by countries and terrorist organizations seeking such capabilities;
- Roll back existing programs and capabilities worldwide;
- Deter the use of these weapons; and
- Adapt military forces and emergency assets to respond to the threat posed by these weapons.

The following sections examine various facets of the WMD proliferation threat, including: the threat of nuclear diversion from the FSU; the CW/BW terrorist threat; and the military threat posed by CW/BW, ballistic and cruise missiles, and underground and hardened WMD facilities. In addition, a brief country study of Iraq's CW/BW programs is also provided. For additional information on proliferation threats, the reader is referred to the April 1996 Office of the Secretary of Defense (OSD) report entitled *Proliferation: Threat and Response*.

2.2 The Threat of Nuclear Diversion

Although the threat of a massive nuclear attack involving hundreds or even thousands of weapons from the FSU has diminished, other threats have arisen: the potential acquisition of nuclear materials or even nuclear weapons by states hostile to the United States or by terrorists intent on staging incidents harmful to U.S. interests. There is currently no evidence that any terrorist organization has obtained weapons grade fissile materials. However, U.S. Intelligence is concerned because only a small amount of material is necessary to terrorize populated areas.

The chilling reality is that nuclear materials, technologies, and expertise are more accessible now than at any other time in history — due in part to the dissolution of the Soviet Union and the region's worsened economic conditions and political instabilities. This problem is exacerbated by

the increasing diffusion of modern technology through the growth of the world market, making it harder to detect illicit diversions of materials and technologies relevant to a nuclear weapons program.

U.S. Intelligence is taking all possible measures to support aggressively U.S. Government efforts to ensure the security of nuclear materials and technologies. There are several reasons why U.S. Intelligence is concerned about the security of nuclear materials.

- Russia and the other states of the FSU are not the only potential sources of nuclear weapons or materials. The reported theft of approximately 130 barrels of enriched uranium waste from a storage facility in South Africa, which was covered in the press in August 1994, demonstrates that this problem can begin in any state where there are nuclear materials, reactors, or fuel cycle facilities.

- A few countries whose interests are inimical to the U.S. are attempting to acquire nuclear weapons — Iraq and Iran being two of the greatest concerns. Should one of these countries, or a terrorist group, acquire one or more nuclear weapons, they could enormously complicate U.S. political or military activity, threaten or attack deployed U.S. or allied forces, or even threaten to conduct an attack against the U.S. itself.

- The effort required to become a nuclear power is being reduced. Years ago there were two impediments to would-be proliferators: the technical know-how for building a bomb and the acquisition of the fissile material. While it is by no means easy to make a nuclear weapon, knowledge of weapons design is sufficiently widespread so that a concerted effort could succeed in at least developing a workable, albeit crude, design. The single greatest impediment to a nation acquiring a nuclear capability is the acquisition of fissile material. Nuclear weapons require fissile material in the form of highly enriched uranium or plutonium, both of which require large multi-billion dollar development programs to produce independently.

The protection of fissile material in the FSU has thus become even more critical at the same time that it has become more difficult. Many of the institutional mechanisms that once curtailed the spread of nuclear materials, technology, and knowledge no longer exist or are present only in a weakened capacity. Effective new methods of control have yet to be fully implemented for a large portion of the world's nuclear related materials, technology, and information.

The list of potential proliferators is not limited to states with nuclear weapons ambitions. There are many non-state actors, such as separatists and terrorist groups, criminal organizations, and individual thieves who could choose to further their cause by using fissile or non-fissile (but radioactive) nuclear materials. Despite press articles claiming numerous instances of nuclear trafficking worldwide, U.S. Intelligence has no evidence that any fissile materials have been acquired by terrorist organizations. There are no indications of state sponsored attempts to arm terrorist organizations with nuclear material, fissile or non-fissile. Furthermore, conventional weapons such as improvised explosives remain the most likely option for terrorist groups because they are much easier to use and can be effective as tools of terror. Unfortunately, this does not

preclude the possibility that a terrorist group could acquire enough nuclear material, potentially through illicit trades, to conduct an operation, especially one specifically designed to incite panic.

A non-state actor does not necessarily need fissile material — which is more difficult to acquire — for its purposes. Depending upon the group's objectives, any radioactive material could suffice, but the use of non-fissile materials would likely result in low levels of contamination with very little physical damage. But non-fissile radioactive materials dispersed by a conventional explosive or even released accidentally could cause damage to property and the environment, and cause social, political, and economic disruption. Examples of non-fissionable, radioactive materials seen in press reports are cesium-137, strontium-90, and cobalt-60. These cannot be used in nuclear weapons but could be used to contaminate water supplies, business centers, government facilities, or transportation networks. Although it is unlikely they would cause significant numbers of casualties, they could cause physical disruption, interruption of economic activity, post-incident clean-up, and psychological trauma to a work force and general populace. Non-state actors already have attempted to use radioactive materials in recent operations. For example:

- In November 1995, a Chechen insurgent leader threatened to turn Moscow into an "eternal desert" with radioactive waste, according to press reports. The Chechens directed a Russian news agency to a small amount of cesium-137 in a shielded container in a Moscow park which the Chechens claimed to have placed there. Government spokesmen told the press that the material was not a threat, and would have to have been dispersed by explosives to be dangerous. According to DoD assessments, there was only a very small quantity of cesium-137 in the container. If it had been dispersed with a bomb, an area of the park could have been contaminated with low levels of radiation. This could have caused disruption to the populace, but would have posed a minimal health hazard for anyone outside the immediate blast area.

- The Japanese cult Aum Shinrikyo, which attacked Japanese civilians with deadly gas just one year ago (March 20, 1995) also tried to mine its own uranium in Australia and to buy Russian nuclear warheads.

Traditional terrorist groups with established sponsors probably will remain hesitant to use a nuclear weapon, for fear of provoking a worldwide crackdown and alienating their supporters. In contrast, a new breed of multinational terrorists, exemplified by the Islamic extremists involved in the bombing of the World Trade Center, might be more likely to consider such a weapon if it were available. These groups are part of a loose association of politically committed, mixed nationality Islamic militants, apparently motivated by revenge, religious fervor, and a general hatred for the West.

2.3 The Chemical and Biological Weapons Terrorist Threat

The danger that a terrorist organization like the Aum Shinrikyo could acquire the capability to launch an attack using chemical weapons (CW) or biological weapons (BW) continues to exist. U.S. Intelligence continues to assess and analyze the threat of a terrorist CW or BW

attack, a threat that remains ever present. The Aum Shinrikyo attacks in June 1994, in Matsumoto, Japan, which killed seven and injured 500, and on the Tokyo subway in March 1995, which killed 12 and injured 5,500, were the first instances of large-scale terrorist use of CW agents, but a variety of incidents and reports over the last two years indicate terrorist interest in these weapons. These incidents include, but are not limited to:

- In February 1996, German police confiscated from a Neo-Nazi group a coded diskette that contained information on how to produce the chemical agent mustard gas. German police have stated that there are no indications yet of intent or effort to manufacture the agent.

- Tajik opposition members lacing champagne with cyanide at a New Year's celebration in January 1995, killing six Russian soldiers and the wife of another, and sickening other revelers.

- Press reports indicate that the Kurdistan Worker's Party (a guerrilla group that opposes the Turkish rule of historically Kurdish regions) poisoned water supplies in southeast Turkey with cyanide.

Terrorist interest in CW and BW is not surprising, given the relative ease with which some of these weapons can be produced in simple laboratories, the large number of casualties they can cause, and the residual disruption of infrastructure. Although popular fiction and national attention have focused on terrorist use of nuclear weapons, CW and BW are more likely choices for such groups.

- In contrast to the fabrication of nuclear weapons, the production of BW requires only a small quantity of equipment.

- Even very small amounts of BW and CW can cause massive casualties. The fact that only 12 Japanese died in the Tokyo subway attack has tended to mask the significance of the 5,500 people who required treatment in hospital emergency rooms. Such a massive influx of injured — many critically — has the potential to overwhelm emergency medical facilities, even in a large metropolitan area.

- Terrorist use of these weapons also makes them weapons of mass destruction because of the necessity to decontaminate affected areas before the public will be able to begin feeling safe again.

Although the Aum Shinrikyo case demonstrates that terrorists can produce CW, they also may be able to directly acquire these weapons via other means, including: theft of agents from research labs, acquisition of commercially available poisons, theft of chemical munitions held by the military, black market activity, and receipt of ready-made CW from a state sponsor. It is unlikely that all such acquisition attempts will be discovered and investigated. This is especially troublesome for BW. There is no doubt that the use of BW could be devastating and, at the very

least, seriously disrupt the daily lives and business activities of Americans. Consequently, BW agents represent a serious threat to U.S. national security.

The continued inclusion of states such as Iran, Libya, and Syria on the terrorism list highlights the danger of potential state sponsorship of a terrorist's CW or BW program, although there is no evidence of state sponsors providing CW or BW or the technologies to produce them to terrorist groups.

The Aum Shinrikyo. The investigation of Aum leader Shoko Asahara has resulted in a number of revelations about the cult's activities. Press reports allege that:

- Asahara ordered the capability to produce sarin beginning in 1993; a large agent production complex was not operational until March 1994.
- Some evidence suggests that the group may have tested sarin on sheep in Australia. Press reports claim that examination of some 30 sheep carcasses at an abandoned Aum site in Australia revealed the presence of sarin and other pesticides of similar structure.
- After the breakup of the Soviet Union, Aum expanded its activities in Russia, claiming some 30,000 followers there in addition to the 10,000 in Japan.
- Aum's Russian element broadcast religious radio programs into Japan from the Russian Far East.
- Video news footage indicates that a Russian-made GSP-11 toxic gas detector was found at the Aum compound in Japan. Designed to be used on the battlefield, the Russian detector can also be used in a nerve agent production and handling facility.
- Asahara intended the simultaneous chemical strike on 10 locations in the Tokyo subway to be a massive mystery attack that would divert attention from the cult.
- In February 1996, the Thai police were informed by the Japanese embassy that members of Aum Shinrikyo had arrived in Thailand possibly to carry out terrorist activities. One individual was arrested and later identified as an Aum member; however, there is no information indicating that terrorist activity was planned or conducted in Thailand.

2.4 The Military Threat of Chemical and Biological Weapons

The military threat from chemical and biological weapons is greater today than it has ever been — particularly in regions where religious, ethnic, and/or economic strife are feeding the roots of conflict. Exacerbating the problem is the worldwide proliferation of knowledge and technology related to CW/BW and weapon development. Ready access to international computer networks and databases provides a would-be proliferant with unparalleled access to information that can

greatly accelerate the development of a CW/BW weaponization program. Not only must U.S. forces be prepared for these threats; they must be prepared now.

The costs of nuclear weapons, the requirement for large supporting infrastructures, and the need to acquire the many different technologies necessary for weaponization are limiting factors in achieving a nuclear weapons capability. On the other hand, initiating a CW agent production capability is a rather straightforward adaptation of basic industrial chemical processes. Similarly, BW agents can be produced by countries possessing a pharmaceutical, veterinary, or medical infrastructure. For such countries, CW and BW production is technically feasible and can become a reality with the acquisition of some specialized equipment, cooperation of appropriate scientists and engineers, and the political will to do so. The military effectiveness of CW/BW weaponization will depend on the overall support available from the country's military infrastructure and the training and doctrine development it can provide. However, with only modest investments a credible and effective CW/BW weaponization program can be established.

Aimed at certain critical nodes in the military infrastructure of the U.S., either domestically or abroad, CW and BW could seriously disrupt the execution and tempo of military operations. Contamination of mobilization/logistics nodes, ports, and other choke points created during force projection (e.g., the ports at Al Jubyal and Ad Dammam during the Gulf War) could delay the initiation of military campaigns, increase the exposure and vulnerability of troops, and threaten the very success of military operations. It is imperative, therefore, that U.S. forces be prepared to operate effectively in CW/BW contaminated environments while simultaneously being able to detect and identify threat agents, treat casualties, and remediate the contaminated area.

The Soviet Union may have had the most advanced CW and BW programs in the world; at the very least, it certainly had the largest. The collapse of the Soviet Union and the current economic and unemployment problems of the Newly Independent States of the FSU may have a significant impact in the coming years on the direction and pace of CW and BW development throughout the world. While not sanctioned by the standing governments of the FSU, individuals and organizations may be tempted to sell related knowledge and materiel for hard currency just to survive. Certainly, the scientists and engineers formerly employed in the Soviet CW/BW weapons complex could be vulnerable to this temptation. Just as the level of protection and control of nuclear materials has declined since the fall of the Soviet Union, so too could CW and BW knowledge and material become vulnerable to pilfering by entrepreneurs looking to turn a quick profit in the international proliferation marketplace.

Press reports indicate that the Soviet Union may also have developed CW agents which are harder to detect, protect against, and treat than standard nerve and other conventional CW agents. Proliferation of knowledge and material concerning these CW agents to regions of instability or by rogue nations could severely impact U.S. national interests, national policy, and military strategy. The prospect of facing a country, such as Iraq, equipped not just with CW, but with CW for which we do not possess adequate means of protection or detection is a sobering thought, indeed.

Another less well understood CW threat is the potential for a Bhopal-like event resulting from deliberate targeting of industrial facilities in populated areas. U.S. forces operating in

industrial areas could face a combined threat of conventional CW agents and exposure to industrial chemicals released either deliberately by saboteurs or as a result of collateral effects associated with military attack operations (i.e., by friend or foe).

Currently there are some 20 countries that possess or are seeking to acquire CW and BW capabilities. Some of these programs are relics from the Cold War, others are the result of current tensions and instabilities, and still others defy any reasonable explanation (at least by Western standards). Whatever the rationale for the existence of these programs, they all have the potential to pose a serious threat to U.S. military forces operating in or near these countries. The importance and gravity of these issues are underscored by noting that the countries which are the greatest concern to the U.S. as potential CW/BW weapons proliferants are also in regions where the U.S. has well defined national security interests (e.g., the Middle East). Therefore, it is of paramount importance that U.S. forces continue to maintain a credible capability to operate effectively in a CW/BW contaminated environment, and that the U.S. continue to play a leadership role in CW and BW arms control by ratifying the Chemical Weapons Convention and working to strengthen the Biological Weapons Convention.

Ballistic Missile WMD Delivery Systems. Ballistic missiles offer potential proliferators several advantages in delivering NBC weapons. This is evidenced by the fact that many of the states thought to possess or seeking to possess NBC weapons also have programs to develop or acquire ballistic missiles. Ballistic missiles are less expensive to acquire and sustain than a modern air force. They have a relatively low profile infrastructure, and the use of mobile launchers makes them far less vulnerable to U.S. offensive operations than, for example, manned aircraft with ties to fixed air bases. The U.S. experience in the Gulf War demonstrated the exceptional challenge posed by mobile ballistic missile launchers to counterforce operations. Perhaps the greatest attraction of ballistic missiles is the difficulty in defending against them.

The potential for coercion is, perhaps, the long-range ballistic missile's greatest value to proliferators and the greatest challenge for those seeking to restrain them. Beyond their coercive value in threatening distant cities and their ability to distract and tie up military resources seeking to counter them, ballistic missiles — if sufficiently accurate and/or lethal — can pose a direct military threat as well. During the Gulf War, 25 percent of U.S. combat fatalities resulted from a single SCUD missile strike on a makeshift barracks in Dhahran, Saudi Arabia. Whether as a terror weapon against civilian populations or as a means to threaten the rear of U.S. and coalition forces, ballistic missiles can be an effective offensive weapon, even in the midst of U.S. air superiority. This is particularly the case with WMD-armed ballistic missiles. Because of their ability to spread lethal effects over wide areas, arming ballistic missiles with WMD can, to some extent, compensate for a lack of missile accuracy. An inaccurate ballistic missile armed with conventional high explosives can be transformed from a militarily ineffective terror weapon to a militarily significant weapon by adding a WMD warhead. Hence, those who seek to develop or acquire WMD will likely seek to develop or acquire ballistic missiles as well, and sometimes, unfortunately, vice versa.

Cruise Missile WMD Delivery Systems. Article 2 of the Intermediate-Range Nuclear Forces (INF) Treaty provides a useful definition: "A cruise missile is an unmanned, self-propelled vehicle that sustains flight through the use of aerodynamic lift over most of its flight." Cruise

missiles may be even less expensive and more accurate than ballistic missiles, and their smaller size may make them an even more elusive target for counterforce operations. Furthermore, they may also be more difficult to defend against than manned aircraft because of their lower radar cross-sections and flight characteristics. Cruise missiles tend to be small, easy to hide, capable of being launched from a variety of mobile launch platforms (air, ground, and sea based) without significant modifications to the missile, relatively hard to detect in flight, and potentially accurate to a few tens of meters (e.g., via the Global Positioning System). Even unsophisticated general aviation aircraft and commercially available remotely piloted vehicles could be turned into an unmanned cruise missile of sorts and configured to accomplish a variety of militarily significant missions. Such aircraft are widely available and inexpensive to purchase, support, and operate. Even though short-range anti-ship cruise missiles are already widely available, there are only a few countries that possess long-range, land-attack cruise missiles. However, there are no technological barriers preventing even developing nations from developing or purchasing these relatively inexpensive, potentially very accurate WMD delivery systems. Although they can be designed to deliver their payloads to great distances (both the U.S. and the FSU built cruise missiles with range capabilities of more than 3000 km), the majority of currently available cruise-type missiles have ranges typically less than about 2500 km.

Underground and Hardened WMD Facilities. Some countries are concealing WMD facilities and protecting them from attack by constructing underground and other hardened facilities. Placing a WMD capability — a weapon, a delivery system, or an NBC weapon production complex — within an underground facility enhances a country's ability to conceal the facility's location, in addition to providing considerable protection against attack. Outer perimeter protection in such facilities may involve concrete and steel roofs with earth cover. Other options include the use of tunnels, including existing coal and salt mine complexes and natural caves that can be both deep and extensive. Within a hardened complex such measures as blast doors, barriers, turns in tunnels, and expansion chambers can channel and deflect blast waves to mitigate their destructive effects. Modern excavating equipment has speeded the process of constructing such facilities and has reduced construction costs.

The Iraqi shallow buried and hardened facilities attacked during the Gulf War were for the most part remnants of an earlier generation of protective facilities construction. Because of the success achieved by U.S. weapons against these facilities, a new trend has been observed: the increased use of deep underground structures, such as abandoned mines or tunnels, to protect high value military assets. A proliferant state's WMD forces and supporting infrastructure elements are one such high value military asset. Libya's construction of the Tarhunah tunnel complex, a suspected large scale CW production facility, is the most recent example of this trend.

2.5 Iraq: A Country Study

This country study examines the magnitude of Iraq's CW and BW programs and underscores the complexity faced by international efforts to curb the spread of these weapons. Details about the breadth of Iraq's past CW and BW programs are presented to demonstrate the

broad range of weapons that a state sponsor of terrorism has available and could provide to terrorists if it so chooses.

The unprecedented inspections conducted in Iraq by the United Nations (UN) have revealed much about Iraqi WMD programs. In the wake of the August 1995 defection of two high-level Iraqis, the Baghdad government turned over to the United Nations Special Commission (UNSCOM) and the International Atomic Energy Agency (IAEA) a large cache of WMD-related documents and have revealed even more information in extensive discussions with both UN organizations. The sudden revelation of new information underscored the long-standing judgment that the Iraqis had made efforts to deceive UNSCOM and the IAEA. Such behavior resulted in UNSCOM Chairman Ekeus's delivery of a strongly worded report to the UN Security Council that was critical of Iraq's progress in fulfilling its obligations under the UN resolutions imposed following the Gulf War. Despite the UN resolutions, Iraq successfully concealed some developments in both its CW and BW programs.

Iraq's Chemical Warfare Program. These revelations demonstrated the ability of a determined proliferator to hide some information about its CW program even when subjected to systematic and continued scrutiny and included:

- The Iraqi program to develop the nerve agent VX actually began as early as May 1985 and continued until December 1990 without interruption; Iraq claimed previously that its program spanned only the period April 1987 to September 1988.

- Iraq produced 65 tons of chlorine, intended for the production of VX, and had more than 200 tons each of the precursor chemicals phosphorous pentasulfide and di-isopropylamine. Together, these three precursors would have been sufficient to produce almost 500 tons of VX.

- Iraq developed a true binary sarin-filled artillery shell, 122 mm rockets, and aerial bombs in quantities beyond prototype level. An Al Husayn missile with a chemical warhead was flight-tested in April 1990.

Iraq received significant assistance from outside suppliers.

Iraq's Biological Warfare Program. Following the August 1995 defections, Iraq revealed substantial additional information about its extensive BW program. The Iraqi Government adopted a policy to acquire additional BW in 1974. R&D began in 1975, but went into hiatus in 1978. In 1985, Iraq restarted BW R&D. Initial work focused on literature studies, until bacterial strains were received from overseas in April 1986. Additionally, Iraq's revelations to the UN included the following information on the production and weaponization of its BW agents:

- A total of 6,000 liters of concentrated botulinum toxin and 8,425 liters of anthrax were produced at Al Hakam during 1990. An additional 5,400 liters of concentrated botulinum toxin were produced at the Daura Foot and Mouth Disease Institute during the period of November 1990 to January 15, 1991; 400 liters of concentrated botulinum toxin was produced at Taji; and 150 liters of concentrated anthrax were produced at Salman Pak.

- Production of clostridium perfringens (a biological agent that causes gas gangrene and, when aerosolized, can cause severe gastric effects) began in August 1990. A total of 340 liters of concentrated agent was produced.

- Static field trials of anthrax simulant and botulinum toxin were conducted using aerial bombs as early as March 1988. Effects were observed on test animals. Additional weaponization tests took place in November 1989 with 122 mm rockets. Live firings of 122 mm rockets filled with agents were conducted in May 1990.

- Large-scale weaponization of BW agents began in 1990. Iraq filled more than 150 bombs and 25 missile warheads with agent. Some of the bombs were dispersed to military airfields.

- Iraq worked to adapt a modified aircraft drop tank for BW agent spray operations beginning in December 1990. The tank could be attached either to a piloted fighter or to an unmanned aircraft that would be guided to the target by a piloted aircraft. The tank was designed to spray up to 2,000 liters of anthrax on a target. Iraq claims the test was a failure, but three additional drop tanks were modified and stored, ready for use.

DoD's military response to counter WMD threats is discussed in Section 4 of the report. DOE's programs in proliferation prevention are described in Section 5, and U.S. Intelligence's response in the counterproliferation mission area is summarized in Section 6. Details of U.S. Intelligence's response, including new initiatives, activities, and programs which address shortfalls in efforts to counter proliferation, may be found in the Intelligence Annex to this report, published under separate cover.

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3. Review of the 1995 CPRC Findings and Recommendations

3.1 Summary of the Findings and Recommendations of the 1995 CPRC

The CPRC reported last year in its May 1995 Report to Congress that progress had been made in many areas leading to 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. The CPRC also found that:

- Planning, coordination, and oversight activities expanded significantly, providing 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 supported and endorsed the DoD, DOE, and U.S. Intelligence organizational initiatives, programs, and FY 1996 budgets. The CPRC also urged Congress to support the initiatives and programs budgeted for FY 1996.

- Within the context of the NPRC-identified Areas for Progress, the CPRC identified capability shortfalls that required either new or additional emphasis for FY 1997 in missile defense, responding to paramilitary and terrorist WMD threats, and in developing low collateral damage, non-nuclear weapons for WMD target defeat.

The CPRC recommended that FY 1997 and out-year funding for Department and Agency counterproliferation initiatives be evaluated against other pressing priorities within the normal Department and Agency budgeting processes. The CPRC also recommended continuing the joint DoD, DOE, and U.S. Intelligence CPRC process after the Congressional mandate ends this year. This will ensure ongoing interdepartmental coordination by top management of programs related to countering proliferation. The CPRC endorsed the 1994 NPRC Areas for Progress and the CINC counterproliferation priorities and combined them to form the counterproliferation ACEs. The counterproliferation ACEs were established to serve as the basis for further program reviews and to assess future progress in meeting counterproliferation and related nonproliferation mission needs.

Key Accomplishments in Planning, Coordination, and Oversight of Programs for Countering Proliferation. The CPRC cited several accomplishments made in inter- and intra-departmental coordination and oversight since the establishment of the NPRC and recommended the continuation of interagency efforts to coordinate programs related to countering proliferation. These accomplishments included:

- Signing a DoD/DOE Memorandum of Understanding (MoU) establishing a joint DoD/DOE Senior Management Advisory Group to coordinate and foster joint R&D activities in countering proliferation.

- Continuing joint DoD/U.S. Intelligence cooperation through the DCI's Nonproliferation Center (NPC), 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.

- Establishing a new DOE/U.S. Intelligence partnership effort for R&D in new technology areas related to countering proliferation, which 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.

- Creating an interagency Technology Working Group within the National Security Council structure to review technology efforts underway in the various U.S. Government Agencies that pertain to nonproliferation, and, subsequently, establishing the Nonproliferation and Arms Control Technology Working Group, co-chaired by DoD, DOE, and the Arms Control and Disarmament Agency, as the mechanism for coordinating arms control and nonproliferation R&D.

- Establishing a single point of contact for counterproliferation programs within the DoD. This responsibility has been assigned to the Assistant to the Secretary of Defense (ATSD) for Nuclear and Chemical and Biological Defense Programs (formerly the ATSD for Atomic Energy).

- Establishing the Counterproliferation Support Program to leverage core DoD counterproliferation-related programs to accelerate the fielding of enhanced capabilities.

- Establishing and maintaining close coordination and cooperation through the CPRC review process and by direct interaction between the Counterproliferation Support Program manager and the Joint Staff/JROC to ensure that DoD's RDT&E and acquisition programs are responsive to the CINCs' evolving counterproliferation priorities and needs.

- Designation, by the CJCS, of a counterproliferation JWCA and completion of a *Missions and Functions Study* led by the Joint Staff that defined the counterproliferation mission and associated operational concepts; this activity lead to the development of the CJCS's concept plan, the *Counterproliferation 0400 CONPLAN*, now being coordinated.

- Establishing new and enhanced DOE programs for Material Protection, Control, and Accounting for the physical protection of Russian nuclear materials, expansion of support to the International Atomic Energy Agency, 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.

- Establishing several U.S. Intelligence programs and initiatives which are described in the Intelligence Annex to this report.

3.2 Origin of the Counterproliferation ACEs

Last year, the CPRC endorsed both the NPRC Nonproliferation/Counterproliferation Areas for Progress and the CINC counterproliferation priorities. These two lists were combined to form the Counterproliferation ACEs. Figure 3.1 summarizes this process. The Areas for Progress are described in the NPRC's 1994 Report to Congress entitled *Report on Nonproliferation and Counterproliferation Activities and Programs*. The counterproliferation ACEs were established by the CPRC using the CINC counterproliferation priorities as a baseline and were broadened to include the NPRC Areas for Progress. The counterproliferation ACEs are used 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 counterproliferation ACEs serve as a unified basis for reviewing and assessing future progress in meeting counterproliferation and related nonproliferation mission needs. The historical context of the counterproliferation ACEs is described briefly in what follows.

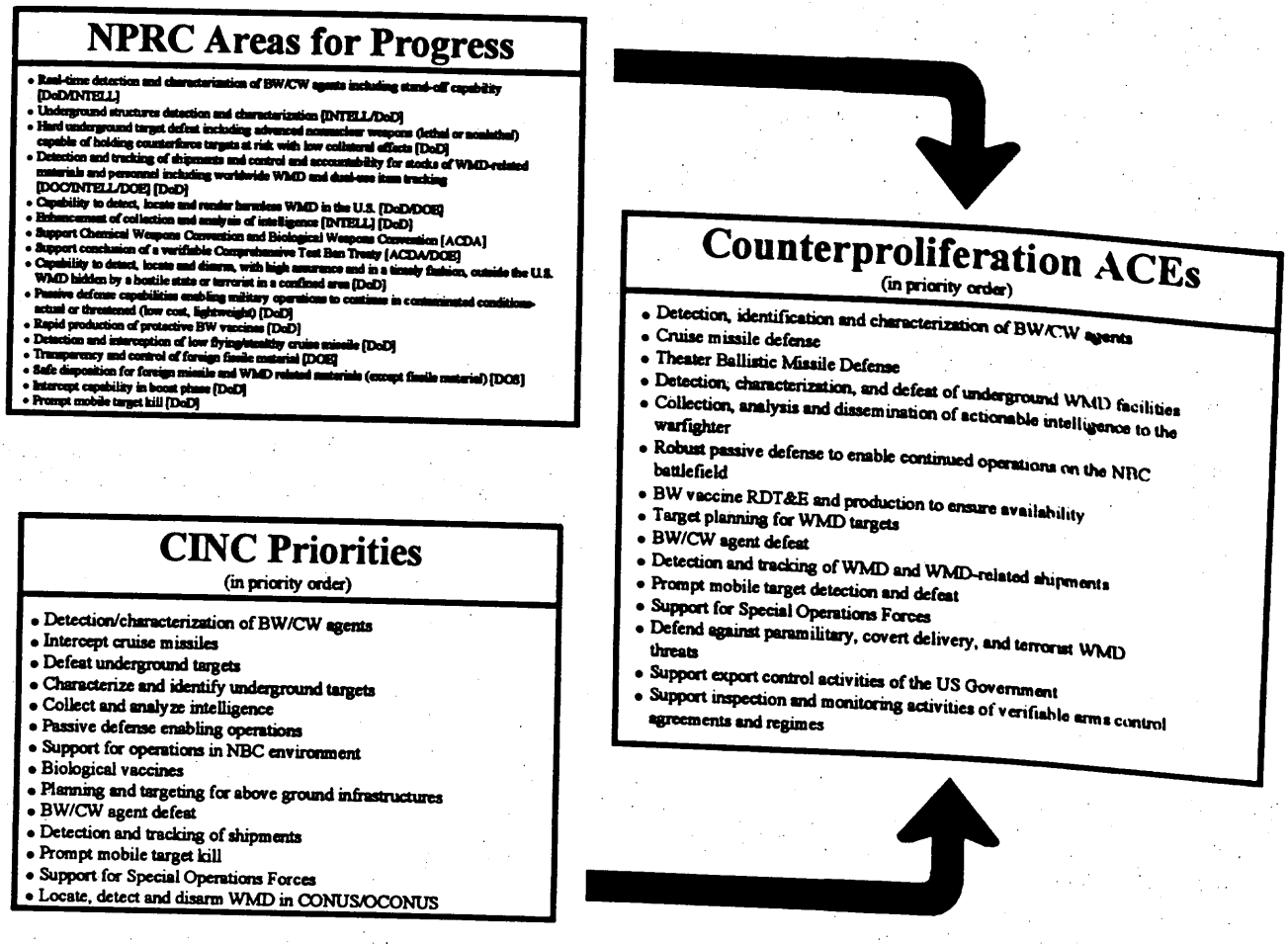

Figure 3.1. Areas for Progress and CINC Priorities: Origin of the Counterproliferation ACEs

In 1994, the NPRC determined that each of sixteen "Areas for Progress" represented an opportunity for significant improvements in operational capabilities related to countering proliferation and judged that increased investment in them would lead to the greatest progress in addressing the priority capability shortfalls identified by the committee.

The Joint Staff planners are continuing the 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 required by the CINCs for meeting WMD proliferation threats. The Joint Staff and CINCs, through a JWCA team on counterproliferation, also determined that some shortfalls existed in areas that were not included in the NPRC's 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 also would require enhanced capabilities to accurately target and attack while producing only minimal collateral effects.

In establishing their priorities, 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 Special Operations Forces (SOF) and WMD antiterrorist operations was also judged a high priority by the Secretary of Defense and the Joint Staff. While these activities were assigned a lower priority by the CINCs in a *warfighting* context, this relative standing may change as the CINCs become more fully engaged in the counterproliferation mission via their deliberative planning process.

3.3 Progress in Addressing the Counterproliferation ACEs

DoD, DOE, and U.S. Intelligence have each made serious commitments to address the threat posed by the proliferation of WMD. Table 3.1 summarizes the FY 1997 investments planned by DoD and DOE for each ACE priority. U.S. Intelligence's FY 1997 investments are discussed in the Intelligence Annex. The combined DoD/DOE investment for FY 1997 is nearly $4.7 billion. DoD's investment for FY 1997 is just under $4.3 billion, which compares favorably with last year's investment of $3.8 billion. DoD budgets the bulk of its counterproliferation investment in the areas of theater and national missile defense (ACE priorities 2 and 3); detection and characterization of BW/CW agents (ACE priority 1); maintaining a robust passive defense to enable continued operations on the NBC battlefield (ACE priority 6); prompt mobile target detection and defeat (ACE priority 11); and supporting the inspection and monitoring of verifiable arms control agreements (ACE priority 15). DOE's investment for FY 1997 is $411.5 billion, up 5.5% from last

Table 3.1: Investments in the Counterproliferation ACEs

Counterproliferation ACEs (in priority order)	Counterproliferation Related Investments for FY 1997 [$M]		
	DoD	DOE	INTELL*
1.) Detection, Identification, and Characterization of BW/CW Agents	306.3	-	
2.) Cruise Missile Defense	21.8	-	
3.) Theater Ballistic Missile Defense	2,884.0	-	
4.) Detection, Characterization, and Defeat of Underground WMD Facilities	42.3	-	
5.) Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter	3.0*	-	
6.) Robust Passive Defense to Enable Continued Operations on the NBC Battlefield	188.1	-	
7.) BW Vaccine RDT&E and Production to Ensure Availability	62.4	-	
8.) Target Planning for WMD Targets	28.5	-	
9.) BW/CW Agent Defeat	3.1	-	
10.) Detection and Tracking of WMD and WMD-Related Shipments	4.3	31.0	
11.) Prompt Mobile Target Detection and Defeat	138.5	-	
12.) Support for Special Operations Forces	59.2	-	
13.) Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	21.4	35.3	
14.) Support Export Control Activities of the U.S. Government	13.2	16.9	
15.) Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes	486.1	198.3	
• Other DOE Core Nonproliferation Programs	-	130.0	
• **TOTALS:**	4,262.2	411.5	

* Please see the Intelligence Annex to this report.

year. DOE's nonproliferation focus results in concentration of its investment in supporting inspection and monitoring activities of verifiable arms control agreements (ACE priority 15); defending against paramilitary, covert delivery, and terrorist WMD threats (ACE priority 13); tracking nuclear material shipments (ACE priority 10); and supporting export control activities (ACE priority 14). In addition, DOE is planning to invest $130.0 million in its core nonproliferation programs (See Section 5).

While the higher priority ACEs generally receive greater investment, the distribution of investments among the ACEs shows some variability. This is due to a variety of factors, including variation in the state-of-the-art and maturity of key enabling technologies, differing development stages of program evolution, unequal opportunities for near-term (versus longer term) payoffs, and due to the fact that some ACEs simply will require greater investment than others (e.g., those requiring extensive R&D). Consequently, it is difficult to judge progress in the counterproliferation

ACEs simply by looking at the numbers. It requires a closer look at the specific accomplishments achieved by the programs addressing each ACE (discussed in Sections 4 - 6).

It must also be noted that several DoD and DOE programs related to countering proliferation respond to multiple ACE priorities. In these cases, budget values listed in Table 3.1 are included under the ACE priority corresponding to the primary thrust of the program. (In the program descriptions provided in Sections 4 - 6 and in Appendices C and D, the ACE priority listed first in the tabular summaries represents the primary thrust of the program.) For example, while programs developing BW/CW detection systems clearly support robust passive defense capabilities (i.e., ACE priority 6), their primary thrust is addressing ACE priority 1. Likewise, several active defense systems under development have some capability to defend against cruise missiles, but, since their primary focus is ballistic missile defense, they are included under ACE priority 3. National Missile Defense programs (which is not strictly an ACE priority) also contribute to theater ballistic missile and cruise missile defense (via technology sharing/synergy). Finally, since SOF units have important responsibilities within DoD to respond to paramilitary, covert delivery, and terrorist WMD threats, contributions in ACE priorities 12 and 13 for DoD are difficult to distinguish. The CPRC acknowledges that the investment breakout represented in Table 3.1 is necessarily subjective. It, nevertheless, provides a useful means, in broad terms, to characterize the commitments of DoD, DOE, and U.S. Intelligence in meeting the challenges posed by the counterproliferation ACEs.

4. DoD Counterproliferation Programs

In the subsections that follow, DoD activities and programs deemed by the CPRC to be strongly related to counterproliferation are discussed. Section 4.1 is devoted to a discussion of the various activities and key developments affecting DoD's overall Counterproliferation Initiative. This includes discussions of new DoD initiatives scheduled for enactment in FY 1997, DoD policy perspectives, CINC priorities and Joint Staff counterproliferation related activities, and a summary of the current status of the Counterproliferation Support Program. DoD program descriptions are provided in sections 4.2 - 4.8 and organized in terms of the seven counterproliferation functional areas: proliferation prevention, strategic and tactical intelligence, battlefield surveillance, WMD counterforce, active defense, passive defense, and countering paramilitary, covert delivery, and terrorist WMD threats. Key program accomplishments are described, and FY 1997 budgetary data is provided for each program. Additional programmatic details, including key program accomplishments and milestones, are provided in Appendix C. Finally, Section 4.9 summarizes how these programs and their accomplishments directly address the counterproliferation ACEs.

It should be noted that the CPRC review process is ongoing, as is the DoD-wide counterproliferation program review being conducted by OSD, the Director for Program Analysis and Evaluation (PA&E), the Joint Staff, Services, and CINCs. (See Sections 4.1.2 and 4.1.4.) The DoD programs described in this section are included based on the CPRC's judgment of their relevance to the counterproliferation ACEs 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 may need to be redefined.

4.1 Introduction and New Developments

4.1.1 DoD Directive on Counterproliferation Implementation. DoD has made significant progress in rising to the challenges presented by the proliferation of WMD. While the advances have been positive, the Secretary of Defense recognized the necessity to blend together these widespread efforts to form a more robust campaign-level approach to address this formidable task. He directed that a DoD Directive be developed to normalize established policy, assign responsibilities, and formalize relationships among DoD organizations for the continued implementation of the DoD Counterproliferation Initiative. This Directive, which is in final review within the Department, establishes counterproliferation terms of reference to ensure uniform application of the Directive among the DoD components. More importantly, the Directive enacts the membership, functions, and authorities of the DoD Counterproliferation Council.

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 NBC weapons. The major objectives of DoD policy are:

- Support overall U.S. Government efforts to ***prevent*** the acquisition of NBC weapons and missile capabilities;
- Support overall U.S. Government efforts to ***roll back*** proliferation where it has occurred;
- ***Deter*** and prevent the effective use of NBC weapons and their delivery systems against the U.S., its allies, and U.S. and allied forces; and
- ***Adapt*** U.S. military forces, planning, doctrine, and training to operate effectively against the threats posed by NBC weapons and their delivery systems.

To achieve these counterproliferation policy objectives, U.S. forces must possess a spectrum of capabilities. The research, development, and acquisition programs designed to bring these capabilities to fruition are discussed in the program descriptions provided in Sections 4.2 through 4.8 below.

Establishment of the CP Council. To ensure that DoD's implementation of counterproliferation objectives continue to be adequately integrated and focused, a DoD Counterproliferation Council (i.e., the "CP Council") has been established. The CP Council is composed of the Deputy Secretary of Defense (as Chairman), the Under Secretary of Defense for Acquisition and Technology, the Under Secretary of Defense for Policy, the Vice Chairman of the Joint Chiefs of Staff, the Under Secretaries of the Military Departments, the Vice Chiefs of the Military Services, the Assistant Secretary of Defense for International Security Policy, the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, and the Director for Strategic Plans and Policy of the Joint Staff. The CP Council is scheduled to meet later this year, and the agendas for the first four meetings have been established. They are: 1) comprehend the NBC and missile threats, and their implications, in two Major Regional Contingency scenarios; 2) discuss how U.S. ground, air, and naval forces train and exercise to operate in NBC contaminated environments; 3) consider the status of efforts to establish and test Joint Doctrine for operating in an NBC environment; and 4) review the status of interagency and allied work on counterproliferation issues.

While the CP Council's charter is still being defined and coordinated within the Department, the CP Council is designed to provide high level management oversight to review DoD's progress in coordinating counterproliferation-related programs and activities, resolve counterproliferation-related issues, and work closely with the JCS and Services to develop appropriate acquisition and force planning strategies that will ensure the effective implementation of counterproliferation objectives. The CP Council will also oversee DoD counterproliferation activities in interagency and international fora. In executing its function, the CP Council will: 1) advise the Secretary of Defense on counterproliferation matters; 2) make recommendations regarding decisions on responsibilities for the implementation of the DoD Counterproliferation Initiative; 3) oversee implementation of the DoD Counterproliferation Initiative and review and make recommendations on those elements of

the defense guidance that deal with counterproliferation issues; and 4) develop DoD positions and views on matters relating to counterproliferation for presentation and discussion outside the DoD, to include preparations for participation in senior interagency discussions and interaction with other U.S. Government Departments and Agencies.

4.1.2 CINC Counterproliferation Priorities and Planning Activities. The counterproliferation activities of DoD includes the application of military force, when necessary. Deriving the CINCs' formal warfighting plans follows a deliberate and formalized "national objective-to-task" process that proceeds from top-level Presidential guidance and instructions down to specific military operational plans and activities. The National Security Strategy, Presidential Decision Directive-13 (PDD-13), and the Counterproliferation Policy Guidance of the Secretary of Defense have already provided the framework for counterproliferation planning. Three joint documents that have evolved from these broad guidance documents are the *Missions and Functions Study*, the *Counterproliferation Charter*, and the CJCS's *Counterproliferation 0400 CONPLAN* (concept plan). These are the key documents that are the prerequisites for beginning the CINCs' formal counterproliferation planning process to execute U.S. counterproliferation policy.

Because the challenges of counterproliferation involve new policy considerations, the *Missions and Functions Study* was a special effort chartered by the Secretary of Defense and aimed at facilitating future DoD counterproliferation planning. The study was a combined effort by the Joint Staff, Services, CINC representatives, and the OSD. Its key findings were: 1) each geographic CINC would be responsible for executing U.S. counterproliferation policy within his area of responsibility (AOR); and 2) implementation of counterproliferation policy within each AOR would be executed via each CINC's standard deliberate planning process. This planning process included the development of the overarching CJCS's *Counterproliferation 0400 CONPLAN*, prior to each CINC developing an AOR-specific counterproliferation CONPLAN.

The findings of the *Missions and Functions Study* were approved by the Secretary of Defense in May 1995, and he further directed that a *Counterproliferation Charter* be written prior to the development of the CJCS's *Counterproliferation 0400 CONPLAN*. The *Counterproliferation Charter* was developed as a supplement to the top-level guidance documents delineated above, providing more of a military focus with respect to the counterproliferation mission. The *Counterproliferation Charter* has been approved by the CJCS and is currently awaiting final approval by the Secretary of Defense. The CJCS's *Counterproliferation 0400 CONPLAN* further defines national level counterproliferation policy and guidance in terms of three national counterproliferation operational objectives, and six counterproliferation operational tasks. The three national counterproliferation operational objectives and six counterproliferation operational tasks evolved from an in-depth analysis of the intentions of multiple top-level U.S. policy documents relevant to the counterproliferation mission. The ensuing objectives and tasks have been fully coordinated throughout the Commands and OSD. These counterproliferation objectives and tasks will guide the CINCs through the development of the AOR-specific CONPLANs. The CJCS's *Counterproliferation 0400 CONPLAN* is in final coordination in the Joint Staff; after which it will be officially given to the CINCs so that they may then initiate their

own AOR-specific counterproliferation planning. The reader is referred to the *Counterproliferation 0400 CONPLAN* for additional details.

The CINCs' Counterproliferation Priorities. The current CINCs' listing of 14 counterproliferation priorities, considered necessary to conduct the counterproliferation mission from a military warfighting perspective, was developed by the Deterrence/Counterproliferation JWCA team and was presented to the JROC for approval in July 1994. The CINCs' counterproliferation priorities are listed in Figure 4.1. The prioritized list evolved from an information base established by the Services and acquisition strategy working groups using the 16 Areas for Progress identified by the NPRC and summarized in its May 1994 Report to Congress. They have since been presented and revalidated by the CINCs during each of four semiannual JROC meetings with the CINCs. The priorities were also reviewed and endorsed by the CPRC in their May 1995 Report to Congress to serve as a basis for the counterproliferation ACEs and for further programmatic reviews.

Table 4.1: Counterproliferation Priorities of the CINCs

CINC Counterproliferation Priorities
1. Detection and characterization of BW and CW agents
2. Intercept cruise missiles
3. Defeat underground targets
4. Characterization and identification of underground targets
5. Collect and analyze intelligence
6. Passive defense enabling operations
7. Support for operations in an NBC environment
8. Production of BW agent vaccines
9. Planning and targeting for above ground infrastructure
10. BW/CW agent defeat
11. Detection and tracking of shipments
12. Prompt mobile target kill
13. Support for Special Operations Forces
14. Locate, detect, and disarm WMD in CONUS and OCONUS

Ongoing Review of Joint NBC Defense and Counterproliferation Programs. During the FY 1997 - 2001 Program Objective Memorandum (POM) budget review, a detailed assessment of all counterproliferation programs within the Joint NBC Defense POM and the Counterproliferation Support Program was conducted. As a result of this review, the JROC provided counterproliferation program recommendations to the Deputy Secretary of Defense in an effort to balance limited fiscal resources across multiple warfighting needs. Following a subsequent assessment of counterproliferation and joint NBC defense programs by OSD's Program Review

Group, the Deputy Secretary of Defense directed a joint review of all DoD counterproliferation programs to assess programmatic alternatives and priorities, policy impacts, CINC requirements, and management alternatives. The goal of this study, which is underway, is to define a restructured program that meets the CINCs' counterproliferation needs. The study is being performed in cooperation with the OSD's Director of PA&E and is scheduled to be completed by 30 June 1996.

The Deterrence/Counterproliferation JWCA is in the process of conducting counterproliferation mission analyses and operational planning workshops with each of the geographic CINCs. This comprehensive effort will serve multiple purposes. The enabling tasks and capabilities required to execute the counterproliferation mission identified during the operational planning workshops will be used by the CINC planners as a point of departure to assist in the development of their AOR counterproliferation CONPLANs. Also, the mission analyses and results of the operational planning workshops will serve to update and further refine the CINCs' military needs to execute the counterproliferation mission, and could result in a revised set of CINC counterproliferation priorities. Lastly, the operational planning workshops will assist in the joint review of all DoD counterproliferation programs by ensuring the CINCs' counterproliferation capability requirements are accurately addressed.

4.1.3 Overview of DoD's Counterproliferation Initiative and the Counterproliferation Support Program. DoD's Counterproliferation Initiative is the Department-wide effort to meet the challenges posed by the proliferation of WMD. It was established to ensure that U.S. forces are prepared to conduct successful military operations in an NBC environment. For FY 1997, DoD, through its Counterproliferation Initiative, will invest approximately $4.3 billion in programs strongly related to counterproliferation. At the heart of DoD's Counterproliferation Initiative is the Counterproliferation Support Program.

The Counterproliferation Support Program was established to address DoD's responsibilities in responding to the 1994 NPRC Areas for Progress. It was instituted in August 1994 by a Program Decision Memorandum (PDM-1, dated 16 August 1994) from the Deputy Secretary of Defense which directed the Assistant to the Secretary of Defense for Atomic Energy (recently redesignated as ATSD for Nuclear and Chemical and Biological Defense Programs, ATSD(NCB)) to develop a Program Execution Plan and a Program Management Plan for implementing the program. The Counterproliferation Support Program was developed in close consultation and coordination with the NPRC/CPRC, the Joint Staff and JROC, the CINCs, the Services, DoD executing agencies, and cognizant components of OSD. This cooperation is ongoing and continuing.

ATSD(NCB) and his Deputy for Counterproliferation (DATSD(NCB)(CP)) are responsible for managing the Counterproliferation Support Program and serve as the central point of contact for DoD counterproliferation programs. The DATSD(NCB)(CP)'s charter is to: 1) provide management oversight for DoD's Counterproliferation Initiative to ensure it fully supports the President's policy to limit the spread of and contain the threat from WMD; 2) manage the Counterproliferation Support Program; and 3) ensure coordination of DoD counterproliferation RDT&E and acquisition efforts with DOE, U.S. Intelligence, and other federal agencies. Oversight of the Counterproliferation Initiative is accomplished by: 1) participating in POM and

Programming, Planning and Budgeting System reviews, Departmental planning and policy development, and acquisition oversight activities; 2) serving as facilitator across individual program boundaries; and 3) interacting with the Joint Staff, JROC, the Deterrence/Counterproliferation JWCA, and the CINCs to ensure that their counterproliferation priorities are adequately addressed. In its role as interagency integrator and coordinator of programs related to counterproliferation, the Counterproliferation Support Program seeks to maximize the payoff from the national investment in counterproliferation-related activities, facilitate interactions between the DoD RDT&E and acquisition communities and other U.S. Government Agencies, and identify non-DoD programs to meet CINC and other DoD user needs.

The goal of the Counterproliferation Support Program is to improve specific military counterproliferation capabilities by: 1) building on ongoing programs in the Services, DoD agencies, DOE, and U.S. Intelligence; 2) focusing on the most critical counterproliferation shortfalls to address major gaps in deployed capabilities (as reflected in the CINC priorities and the ACEs); 3) leveraging existing program funding to more rapidly field capabilities by accelerating the deliverables of DoD programs (i.e., seek the 70% solution, leave the 100% solution to longer term R&D); 4) identifying and enhancing the development of high payoff technologies to accelerate capabilities to the warfighter; 5) identifying and promoting key non-materiel initiatives which complement technological advances; and 6) transitioning Counterproliferation Support Program projects to the Services as soon as practicable. By leveraging sponsor funding and funding efforts with a strong and high level military component or CINC support, the Counterproliferation Support Program can expedite the transition of project development and acquisition responsibilities to the Services. The expedited acquisition process embodied in the ACTD process is ideal for achieving these objectives, and the Counterproliferation Support Program seeks to use ACTDs as the vehicle for rapid demonstration and fielding of new and enhanced military capabilities.

The Counterproliferation Support Program budget request for FY 1997 is $93.7 million, compared to $108.2 million requested for FY 1996. For FY 1997, the Counterproliferation Support Program budget represents less than 3% of DoD's total investment in counterproliferation. Table 4.2 maps Counterproliferation Support Program investments into 8 of the 15 counterproliferation ACEs and compares them with the overall DoD investment in counterproliferation. Approximately two-thirds of its FY 1997 budget is allocated in the areas of remote detection and characterization of BW agents (ACE priority 1) and detection and defeat of underground WMD facilities (ACE priority 4). By focusing its budget on high payoff areas and leveraging existing programs by adding funding to accelerate project schedules and deliverables, modest enhancements in counterproliferation capabilities are being achieved in the near term, and, by the end of the decade, significant advancements in operational capabilities in most of the counterproliferation ACEs will have been attained.

Key management and oversight accomplishments of the Counterproliferation Support Program include: 1) signing an MoU with DOE to draw upon the extensive scientific and technical expertise of the National Laboratories in technology R&D and prototype development; 2) finalizing agreements with the U.S. Special Operations Command (USSOCOM) and the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict (ASD(SO/LIC)) to facilitate closer cooperation among the organizations and to streamline the process of responding to the

Table 4.2: Counterproliferation Support Program ACE Investments

Counterproliferation ACEs (in priority order)	FY 1997 Investments [$M]	
	DoD CP Initiative	CPSP[a]
1.) Detection, Identification, and Characterization of BW/CW Agents	306.3	30.0
2.) Cruise Missile Defense	21.8	-
3.) Theater Ballistic Missile Defense	2,884.0	-
4.) Detection, Characterization, and Defeat of Underground WMD Facilities	42.3	33.1
5.) Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter	3.0[b]	-
6.) Robust Passive Defense to Enable Continued Operations on the NBC Battlefield	188.1	-
7.) BW Vaccine RDT&E and Production to Ensure Availability	62.4	-
8.) Target Planning for WMD Targets	28.5	11.4
9.) BW/CW Agent Defeat	3.1	3.0
10.) Detection and Tracking of WMD and WMD-Related Shipments	4.3	2.8
11.) Prompt Mobile Target Detection and Defeat	138.5	1.4
12.) Support for Special Operations Forces	59.2	7.1
13.) Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	21.4	4.9
14.) Support Export Control Activities of the U.S. Government	13.2	-
15.) Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes	486.1	-
• TOTALS:	4,262.2	93.7

• Notes:
[a] Includes project integration and oversight support
[b] Please see the Intelligence Annex to this report.

requirements of CINC USSOCOM (CINCSOC), DoD, and interagency organizations to counter threats from WMD-armed terrorists and covert and paramilitary forces; 3) reoptimizing Counterproliferation Support Program and Chemical and Biological Defense Program oversight responsibilities in passive defense projects to streamline and improve management practices; and 4) working closer with the Joint Program Office for Biological Defense (JPO-BD) to improve efforts to expedite the rapid fielding of remote BW detection capabilities, including close cooperation in developing a battlefield BW Remote Detection and Early Warning ACTD. These efforts are described in more detail in the descriptions of the Counterproliferation Support Program projects provided in Sections 4.2 - 4.8 below.

New project starts in FY 1996 implemented since last year's CPRC report include: 1) participating in the High Frequency Active Auroral Research Program (HAARP), a Congressional Special Interest Program; 2) enhanced efforts to adapt technologies and equipment to meet the special needs of SOF units in countering WMD threats; and 3) implementation of the effort to integrate a mature Automatic Target Recognition (ATR) system into the Joint Surveillance Target Attack Radar System (JSTARS) aircraft to improve mobile WMD target detection and tracking.

4.1.4 Other Key Activities Affecting DoD's Counterproliferation Initiative. Several other activities and developments impacting DoD's Counterproliferation Initiative have occurred since the CPRC's May 1995 report. They are discussed below.

Ongoing Assessment of Counterproliferation Programs. As discussed in Section 4.1.2, the Deputy Secretary of Defense directed that FY 1997 funding for the Counterproliferation Support Program and the Chemical and Biological Defense (CBD) Program be reduced by $33.4 million and $11.2 million, respectively. He further directed that the Undersecretary of Defense for Policy, USD(A&T), the Joint Staff, PA&E, the Military Departments, and the Undersecretary of Defense for Personnel and Readiness to complete a program review of the Counterproliferation Support Program by June 30, 1996. The review will assess programmatic alternatives and priorities, policy impacts, and CINC requirements and will include a reassessment of reductions called for in the memorandum and an identification of opportunities for devolving program responsibility and funding to the Military Departments. The goal of the study is to define a restructured program that meets the needs of the CINCs in countering proliferation in their AORs in accordance with the overall intent of DoD's Counterproliferation Initiative. The results of this study will be incorporated during the FY 1998 - FY 2003 program budget review process.

Science and Technology Strategic Planning for Counterproliferation. The strategic planning process for the DoD's science and technology (S&T) program was enhanced this year to include a new planning document, the *Joint Warfighting S&T Plan* (JWSTP). This plan provides a joint S&T perspective across the Services and Defense Agencies for the purpose of assuring that the DoD S&T program adequately supports high-priority Joint Warfighting Capability Objectives (JWCOs). These JWCOs are not all inclusive, but they are validated by the JROC as being important to the CINCs. The JWSTP emphasizes Advanced Technology Demonstrations (ATDs) and ACTDs that transition innovative concepts and mature technologies to the warfighter faster and more cost effectively than traditional acquisition mechanisms. The JWSTP will be issued annually as Defense Guidance, and JWCO-supportive elements of the DoD S&T program will receive funding priority in the President's Budget and accompanying Future Years Defense Program (FYDP). BW/CW detection and, more generally, counterproliferation are two of the twelve JWCOs that are addressed in the 1996 JWSTP. With regard to BW agent detection, the JWSTP highlights technological efforts to provide U.S. and friendly forces with as much threat warning time as possible, allowing them to either adopt an appropriate protective posture or avoid contamination completely. Counterproliferation technology demonstrations in the areas of passive defense and counterforce are also described in the JWSTP.

4.2 Status and Accomplishments of DoD Programs in Proliferation Prevention

4.2.1 Introduction and Summary of Relevant Counterproliferation ACEs. DoD's role in proliferation prevention involves working with U.S. Intelligence to identify candidate proliferants before they can acquire or expand their WMD capabilities (ACE priorities 5 and 10); supporting U.S. Government export control activities (ACE priority 14); providing inspection, verification and implementation support for nonproliferation treaties and NBC weapons control regimes (ACE

priority 15); and, if so directed by the National Command Authority, planning and conducting interdiction missions to thwart proliferation activities (ACE priorities 4, 8, 12 and 13).

4.2.2 New DoD Initiatives in Proliferation Prevention.

Preparations for CTBT Implementation. To prepare for the future implementation of the Comprehensive Test Ban Treaty (CTBT), the ATSD(NCB), at the direction of the Deputy Secretary of Defense, established in March 1996 a new Deputy for Nuclear Treaty Programs (DATSD(NCB)(NTPO)) reporting to the ATSD(NCB). This position was established in anticipation of completing negotiations and signing the CTBT in the Fall of 1996. The broad mission of the DATSD(NCB)(NTPO) is to oversee the implementation of DoD programs and activities to implement and support compliance and verification of the CTBT. More specifically, the Deputy for Nuclear Treaty Programs is directed to: 1) establish and chair a DoD CTBT Implementation Working Group and coordinate with cognizant OSD offices, the CJCS, and the DoD Comptroller to provide guidance to ensure that all DoD components adequately prepare — operationally, financially, and administratively — for implementation and support of the CTBT; 2) establish and chair a DoD CTBT Compliance Review Group to coordinate guidance on compliance issues; and 3) provide guidance and oversight to integrated DoD R&D efforts to support compliance and verification of the CTBT. In addition to activities related specifically to the CTBT, the DATSD(NCB)(NTPO) is responsible for executing future DoD tasks that support nuclear limitations treaties such as the Nuclear Non-Proliferation Treaty and international fissile materials control agreements. The Deputy for Nuclear Treaty Programs is also responsible for coordination and management of DoD RDT&E activities related to international efforts to improve nuclear monitoring capabilities. Finally, to support CTBT implementation, the On-Site Inspection Agency (OSIA) is initiating preparation and planning activities in FY 1997 to provide escort, security assistance, and training functions in support of the CTBT. OSIA activities are discussed in more detail in Section 4.2.4 below.

Reorganization of The Militarily Critical Technologies List. *The Militarily Critical Technologies List* (MCTL), the primary source document identifying leading edge military and dual-use technologies for proliferation control, is being divided into three parts starting in 1996. Part 2, entitled *Weapons of Mass Destruction*, will provide a detailed listing, with defined technical performance parameters, of those technologies required for the production of WMD. This volume explicitly treats those technologies of a form and quantity sufficient to threaten vital security interests of the U.S. A summary assessment of foreign capabilities in each of the documented technologies will also be included. Part 3 of the MCTL, entitled *Critical Emerging Technologies*, will provide a listing, with technical parameters, of emerging technologies including those having the greatest promise to provide advanced capabilities for U.S. counterproliferation activities. Part 1, entitled *Weapons Systems Technology*, deals with the basic problem of general weapons technology proliferation.

4.2.3 Counterproliferation Support Program Projects in Proliferation Prevention.

The Counterproliferation Support Program, in partnership with the U.S. Navy, has been successful in deploying the Navy's Specific Emitter Identification (SEI) prototype system to improve its capabilities to identify and track ships at sea suspected of transporting WMD and WMD-related

materials. Deployment of the SEI system began in April 1995, six months ahead of schedule, and 20 units will be deployed by the end of FY 1996. A total of 32 units will be deployed by the end of FY 1997. The program will transition to the Navy in FY 1998, and the Navy intends to continue SEI system procurement, including the implementation of system upgrades. The Counterproliferation Support Program is continuing to support the joint DoD/Federal Bureau of Investigation (FBI) effort to assess the threat of organized crime activities within the FSU involving WMD smuggling and determine how DoD technologies, operational capabilities, and training programs can benefit the FBI. A joint DoD/FBI report describing the outline of this program will be submitted to Congress later this year after completing a full interagency coordination process within the Executive Branch. Key accomplishments include development of a basic WMD training program and a pilot WMD training course. The Counterproliferation Support Program is also supporting, beginning in FY 1997, the ATSD(NCB)'s Deputy for Nuclear Matters in his continuing efforts to support DoD's oversight of DOE's nuclear stockpile stewardship responsibilities, the Nuclear Weapons Council and other senior advisory groups, policy formulation for operational nuclear weapons safety and control, and management activities associated with DoD nuclear stockpile responsibilities. Additional project details are provided in Table 4.3 below and in Appendix C (Table C.1).

4.2.4 Proliferation Prevention Programs Strongly Related to Counterproliferation. Several DoD agency and Service programs are also addressing counterproliferation ACEs in proliferation prevention. These programs are described below and in Appendix C which provides additional details on program accomplishments and milestones. Joint DoD and U.S. Intelligence activities in proliferation prevention are discussed in the Intelligence Annex.

Cooperative Threat Reduction Programs. Several ongoing projects managed by the Cooperative Threat Reduction (CTR) or Nunn-Lugar Program play a major role in proliferation prevention. 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 International Science and Technology Centers to aid in transitioning former FSU weapons scientists to peaceful endeavors. The Deputy for CTR Programs works closely with DOE in these matters. (See Section 5.2.4.) Key accomplishments include: 1) removing all nuclear warheads from Kazakstan and returning them to Russia; 2) securing the withdrawal of 63 of 81 SS-25 mobile intercontinental ballistic missiles (ICBMs) and launchers from Belarus to Russia; 3) early deactivation of SS-24 ICBMs and half of the SS-19 ICBMs in Ukraine; 4) successful completion of an evaluation of the Russian 2-step CW destruction process; 5) completion of an automated inventory control and management system for FSU nuclear weapons; 6) establishment of 17 joint businesses between U.S. companies and the Newly Independent States (NIS) defense enterprises formerly associated with WMD production; 7) involving over 11,500 former Soviet weapons scientist and engineers, once engaged in WMD projects, in peaceful civilian research; and 8) continuing to establish defense and military-to-military contacts focusing on the exchange of professional ideas and practices. Additional details for these programs are provided in Table 4.3 below and in Appendix C (Table C.10).

OSIA Programs. 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 involving nuclear and chemical weapons. Key accomplishments in nuclear and chemical weapons arms control treaties and agreements include: 1) providing technical advisory support activities for the CTBT Interagency Backstopping Group and the U.S. Delegation to the Conference on Disarmament; 2) supporting the Intermediate Range Nuclear Forces (INF) Treaty, now in its eighth year; 3) supporting the Strategic Arms Reduction Treaty (START I), now entering its second year; 4) planning and preparation for verification operations in support of START II ratification; 5) maintaining a capability to monitor Russian nuclear tests under the auspices of the Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty; 6) completion of mock inspection and escort missions in preparation for the entry-into-force of the Chemical Weapons Convention (CWC) planned for June 1996; and 7) in support of the Open Skies Treaty, conducting a trial flight with Germany, hosting U.S. mock inspections, participating in mock certifications with Ukraine, and conducting sensor-related technical talks with Russia.

OSIA's Safeguards, Transparency, and Irreversibility (STI) Program focuses on inspection and escort support for anticipated international agreements involving Mutual Reciprocal Inspection measurements related to plutonium stockpile and plutonium production reactor monitoring. OSIA is supporting DoD and DOE in STI talks with the Russian Federation and will escort a Russian inspection team visit to Rocky Flats in late 1996. OSIA also serves as the executive agent for DoD in support of the UN Special Commission on Iraq and for operations to identify and destroy Iraq's WMD infrastructure in accordance with UN Security Council Resolutions 687 and 715. Additional OSIA project details are provided in Table 4.3 below and in Appendix C (Table C.11).

DTSA Export Control Programs. Several ongoing projects managed by the Defense Technology Security Administration (DTSA) 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. Key accomplishments include: 1) revision of U.S. Export Administration Regulations to keep up with technology and proliferation trends; 2) establishing a new multinational export control system under the Wassenaar Arrangement; and 3) expansion of U.S. export control assistance programs with other nations. Additional project details are provided in Table 4.3 below and in Appendix C (Table C.12).

OSD Critical Technology Support Program. This program develops and publishes the congressionally-mandated MCTL; Part 2 of which is the primary source document identifying technologies required for proliferation control of WMD and their means of delivery. This document, its supporting rationale, and the technical experts supporting the process feed technical analyses directly into the treaty and export control programs which act internationally to constrain the proliferation of WMD and their delivery systems. The MCTL is reviewed and updated regularly to ensure that key WMD and delivery system technologies that could assist in or facilitate WMD proliferation are included. This program is managed by the Deputy Under Secretary of

Defense for International Programs through the Deputy Director for Technology, Plans, and Export Controls. Additional project details are provided in Table 4.3 and in Appendix C (Table C.9).

CTBT Verification Readiness Program. This program is being administered by the Deputy for Nuclear Treaty Programs in the Office of the ATSD(NCB). It focuses on demonstrating the capabilities of seismic and non-seismic monitoring systems to be used in verifying the CTBT and providing general technical support to CTBT negotiations. Key accomplishments include the development and integration of a global continuous threshold monitoring network, a seismic event identification and automated signal processing system, and expansion of the global CTBT data fusion knowledge base, including seismic, hydroacoustic, atmospheric acoustic and radionuclide data. Technology transfer to Air Force is continuing and transfer to the international CTBT organization is beginning. For FY 1997, this program is supported by the Air Force's Treaty Verification Support Program. Additional project details are provided in Table 4.3 and in Appendix C (Table C.5).

DNA Treaty Verification Technology RDT&E Programs. DNA is responsible for the CWC Verification Technology program, which focuses on developing technologies for verification of the CWC. Key accomplishments include the development of instrumentation for characterizing the contents of CW containers without the need for direct sampling, development of a modular laboratory for conducting on-site analyses, and development of inspector training courses. DNA is also responsible for the START I and II Verification Technology program, which develops technologies to enable verification of nuclear weapons treaties, including non-intrusive detection of nuclear weapon reentry bodies. Key accomplishments include achieving an initial operating capability of the START Central Data System and development of a fieldable prototype gravity gradiometer for use in arms control treaty verification. Additional project details are provided in Table 4.3 and in Appendix C (Table C.8).

Air Force Treaty Verification Support and Nuclear Detonation Detection Programs. The Air Force has two procurement programs in this area: the Treaty Verification Support program, which supports ongoing arms control implementation and compliance, and the Nuclear Detonation Detection System, which is aimed at improving capabilities to detect nuclear detonations. In the Treaty Verification Support Program, work is continuing to develop improved seismic, radionuclide, hydroacoustic, and infrasonic detection systems. Key accomplishments include completing the development and transfer of an International Data Center for the CTBT and modification of the Open Skies Treaty aircraft. New nuclear detonation detection sensors have been integrated onto the Global Positioning System (GPS) Block 2R satellite, and new and more capable ground segment software and display systems have been built and tested. Additional project details are provided in Table 4.3 and in Appendix C (Table C.5).

Navy SEI Support Program. The Navy is working with the Counterproliferation Support Program to expedite the deployment of the SEI system by: providing operations and maintenance (O&M) and procurement support; accelerating and upgrading system development; and providing testing, procurement, and fleet integration. Fleet integration of the SEI system is scheduled for FY 1999. Additional project details are provided in Table 4.3 and in Appendix C (Table C.4).

Table 4.3: Key DoD Counterproliferation Programs in Proliferation Prevention

Program/Project Title	Project Description	CP ACEs	Agency	FY97 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	10	Navy	2.651	604160D
• Joint DoD/FBI FSU WMD Smuggling Study	• Assess applicability of DoD technologies, capabilities and training to FBI counterproliferation activities	13,14, 10	FBI	pending*	605160D
• Nuclear Matters Projects	• Assessments of reliability, safety, security, transportation, C2, maintenance, storage, and sustainability of the nuclear stockpile	13	ATSD (NCB)	1.941	605160D
• **Strongly Related CP Programs** • OSIA Programs	• Implementation of inspection, escort, monitoring and treaty verification measures for nuclear weapons arms control treaties and agreements • Support for chemical weapons agreements • CTBT technical advisory support • Support for STI agreements • Support for UNSCOM operations in Iraq	15	OSIA	 46.700 50.900 0.100 2.700 1.600	 O&M OM/Proc O&M O&M O&M
• CTR Programs	• Assisting FSU states in destroying, controlling, and demilitarizing WMD and their WMD infrastructure	15	ATSD (NCB)	327.900	FSU Threat Reduction
• DTSA Programs	• Export control of military and dual-use technologies	14	DTSA	10.504	O&M
• OSD Critical Technology Support Program	• Preparation of the Militarily Critical Technologies List to support export control activities	14	OSD	2.743	605110D
• DNA CWC Verification Technology Program	• RDT&E of technologies for CWC verification, including inspection support	15	DNA	7.228	603711H
• DNA START Verification Technology Program	• RDT&E of technologies to enable verification of nuclear weapons treaties	15	DNA	8.605	603711H
• USAF Treaty Verification Support Program	• Support ongoing arms control treaty implementation and compliance verification, including seismic and nonseismic monitoring technologies to verify nuclear test ban treaties	15	Air Force ATSD (NCB)	26.786	305145F
• USAF Nuclear Detonation Detection System	• Procurement of nuclear detonation detectors for GPS satellite integration	15	Air Force	13.623	305913F
• Navy SEI Support Program	• O&M and procurement of SEI system upgrades	10	Navy	1.500	204575N

* FY 1997 funding will depend on a review of the joint DoD/FBI report to Congress and a program execution plan currently under development.

4.3 Status and Accomplishments of DoD Programs in Strategic and Tactical Intelligence

4.3.1 Introduction and Summary of Relevant Counterproliferation ACEs. The principal focus of DoD intelligence activities is to provide proliferation-related information that is clear, accurate, and timely enough to support, first and foremost, the needs of the military commanders (ACE priority 5). These activities include DoD support to the national strategic intelligence effort down to providing the soldier in the field tactical intelligence specifically related to his immediate situation. DoD works closely with U.S. Intelligence to perform these activities.

The Counterproliferation Support Program is also making a contribution in this area as well. These projects are summarized in Table 4.4 below and in Appendix C. A more thorough description of how DoD intelligence activities support counterproliferation policies may be found in the Intelligence Annex to this report.

4.3.2 New DoD Initiatives in Strategic and Tactical Intelligence. See the Intelligence Annex to this report.

4.3.3 Counterproliferation Support Program Projects in Strategic and Tactical Intelligence. Several Counterproliferation Support Program projects in the proliferation prevention and battlefield surveillance functional areas are relevant to the strategic and tactical intelligence area, including: 1) the SEI system to track WMD-related shipments at sea; 2) the Tactical Unattended Ground Sensor (TUGS), the airborne tactical Forward Looking Infrared (FLIR) sensor, and the Weapon Borne Sensor (WBS) systems being developed for underground WMD facility surveillance, characterization, and BDA; and 3) the incorporation of a mature ATR system into the Joint Surveillance Target Attack Radar System (JSTARS) aircraft. These projects are briefly described in Section 4.2 (SEI) and Section 4.4 (sensors and ATR). A new start this year for the Counterproliferation Support Program is the High Frequency Active Auroral Research Project (HAARP) which is exploring the use of low frequency (i.e., ULF, ELF, and VLF) radio waves for detecting and imaging underground structures and tunnels. At the direction of Congress, the Counterproliferation Support Program is working with the Air Force's Phillips Laboratory to expedite the determination of the viability and military utility of the HAARP concept. A demonstration of the viability of the approach is scheduled for 1996 with field experiments to image known underground structures scheduled for FY 1997. No FY 1997 funding is currently scheduled

Table 4.4: Key DoD Counterproliferation Programs in Strategic and Tactical Intelligence

Program/Project Title	Project Description	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **CP Support Program** • HAARP Program	• Single source transmission of long wavelength radio waves (ULF, ELF, and VLF) for underground structure detection and imaging	4,5	Air Force	0*	603160D
• Proliferation Prevention Projects	• Deployment of the SEI system	(See Section 4.2)			
• Battlefield Surveillance Projects	• TUGS, FLIR, and WBS systems RDT&E • Incorporation of mature ATR into JSTARS	(See Section 4.4)			
• **Strongly Related CP Programs** • USAF HAARP RDT&E	• Scientific research, exploratory hardware development, and operational support	4,5	Air Force	0*	601102F 602601F
• USAF Laser Airborne Remote Sensing	• Develop an aircraft based long range lidar for remote sensing of BW/CW production signatures	5,1	Air Force DIA	3.00**	602601F
• Joint DoD/INTELL Programs	• See Intelligence Annex	(See Intelligence Annex)			

* Currently, no FY 1997 funds are budgeted for this Congressional Special Interest Program.
** Generic technology development that applies to counterproliferation and other mission areas.

for this Congressional Special Interest Program. Additional project details are provided in Table 4.4 and in Appendix C (Tables C.1 and C.5).

4.3.4 Strategic and Tactical Intelligence Programs Strongly Related to Counterproliferation. The Air Force's Phillips Laboratory also supports the HAARP project in conjunction with the Counterproliferation Support Program as a Congressional Special Interest Program. No funding is currently scheduled for this program in FY 1997. The Air Force is also developing an airborne lidar system for long range remote sensing applications, including the detection and characterization of BW and CW agent production signatures. Additional project details are provided in Table 4.4 and in Appendix C (Table C.5). Additional DoD strategic and tactical intelligence programs strongly related to countering proliferation are described in the Intelligence Annex to this report.

4.4 Status and Accomplishments of DoD Programs in Battlefield Surveillance

4.4.1 Introduction and Summary of Relevant Counterproliferation ACEs. 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 operations, and prompt, post-strike BDA activities. Emphasis is being placed on: detection and characterization of underground and surface WMD facilities (ACE priorities 4 and 5); improving BDA capabilities against WMD targets (ACE priorities 4 and 5); continuous wide-area surveillance to support focused target planning activities for WMD targets (ACE priority 8 and 11); and detecting mobile targets, particularly WMD-armed mobile missile launchers (ACE priority 11). (Programs involving the detection and identification of NBC agents on the battlefield are discussed under the passive defense functional area, Section 4.7.) This effort is being coordinated with U.S. Intelligence; the details of which are provided in the Intelligence Annex.

4.4.2 Counterproliferation Support Program Projects in Battlefield Surveillance. The Counterproliferation Support Program is supporting several projects in this area, including: 1) developing enhanced sensor technologies, including the TUGS, airborne tactical FLIR, and WBS systems, for WMD target surveillance, characterization, BDA, and collateral effects monitoring; 2) development of data fusion techniques and signature collection to support underground target characterization; 3) incorporation of a mature ATR algorithm and processor system, being developed by Sandia National Laboratory, into JSTARS to provide near real-time detection and attack of time critical targets; and 4) integrated operational testing of these systems, as part of the Counterproliferation ACTD, to support the rapid fielding of integrated battlefield surveillance and counterforce capabilities. The DOE National Laboratories are also providing technology R&D and technical support for the TUGS, WBS, and ATR projects. Additional project details are provided in Table 4.5 and in Appendix C (Table C.1).

Key accomplishments include: 1) successful testing of the tactical FLIR during the DIPOLE PRIDE test series to assess improved BDA capabilities as part of Phase I of the Counterproliferation ACTD; 2) data collection to evaluate TUGS performance; 3) completion of

the design of a prototype TUGS data acquisition system; 4) initial design of the antenna line payout system for the WBS; and 5) successful flight testing and capability demonstration of the ATR system on JSTARS test assets.

4.4.3 Battlefield Surveillance Programs Strongly Related to Counterproliferation. These programs are described in the Intelligence Annex to this report.

Table 4.5: Key DoD Counterproliferation Programs in Battlefield Surveillance

Program/Project Title	Project Description	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **CP Support Program** • Sensor Technology Project	• Development of TUGS, tactical FLIR, and WBS sensor systems for surveillance, characterization, and BDA of WMD targets	4,5	DNA Air Force DOE	4.601	603160D
• Data Fusion and Signatures	• RDT&E to support accurate underground WMD target characterization	4,8	DNA DARPA	2.071	603160D
• Joint STARS ATR	• Incorporation of a mature ATR algorithm and processor into JSTARS to provide near real-time detection and attack of time critical targets	11	Air Force DOE	1.284	603160D
• **Strongly Related CP Programs** • Joint DoD/INTELL Programs	• See Intelligence Annex	(See Intelligence Annex)			

4.5 Status and Accomplishments of DoD Programs in WMD Counterforce

4.5.1 Introduction and Summary of Relevant Counterproliferation ACEs. In the WMD counterforce area, DoD is working to improve capabilities to defeat WMD threats before they can be used against U.S., allied, and coalition forces. 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. Resources are targeted on improving battlefield surveillance and counterforce capabilities to find and destroy WMD forces and their supporting infrastructure elements while minimizing collateral effects. Emphasis is on defeating hardened underground WMD facilities (ACE priorities 4 and 8) while minimizing associated collateral effects (ACE priorities 8 and 9). Projects involving advanced weapons for WMD target defeat that minimize or mitigate collateral effects are underway as are programs to better understand WMD target vulnerabilities/response and collateral effects phenomenology (ACE priority 8). Sensors under development provide enhanced target characterization, improved BDA, and more efficient restrike planning (ACE priorities 4 and 5).

4.5.2 New DoD Initiatives in WMD Counterforce.

Hard and/or Deeply Buried Target Defeat Capability (HDBTDC) Integrated Product Team. The HDBTDC Integrated Product Team (IPT) is an USD(A&T) approved Phase 0 (i.e., Concept Exploration and Definition) acquisition effort that aims to demonstrate the existence of

concepts to defeat hard and/or deeply buried targets. It is a joint Service effort, with the Air Force designated as the lead Service. The IPT uses Mission Need Statements, originally written by the U.S. Air Combat Command and the U.S. Strategic Command, as the point of entry for developing the capability to hold hard and/or deeply buried targets at risk. These targets are usually heavily defended, fixed, unitary, high-value facilities or functions to which a potential adversary has: 1) applied considerable structural reinforcement (i.e., "hardening"); 2) constructed under the earth's surface (e.g., tunnels); or 3) subsequently covered with materials such as soil, gravel, rock, "burster slabs", and the like in order to frustrate attacks and intelligence collection efforts. Organizationally, the IPT includes an Oversight IPT, a Core IPT, and Working IPTs for Targets/Military Operations, Concepts, Measures, Analysis, Intelligence, Surveillance, and Reconnaissance, and Cost and Operational Effectiveness Analysis (COEA) Planning.

The Concept Exploration and Definition effort is divided into two parts: 1) the Concept Call and Mission and Concept Assessment and 2) the Analysis of Alternatives. The HDBTDC IPT initiated a Request for Information in March 1996 and hosted an Industry Day in April to start the concept collection process. The IPT will formally receive industry concept proposals in May and begin assessing them over a two month period beginning in June. The central result of part 1 will be the "proof of existence" of a defeat capability and, potentially, identification of ancillary requirements for supporting intelligence, surveillance, and target defeat assessments. Part 2 should begin in the Fall of 1996 to start the process of preparing the prerequisites for an acquisition Milestone I (MS I) decision. The primary products of the Analysis of Alternatives process are tailored to display the results of sensitivity and system trade studies for the selected target defeat missions and concepts from part 1 with respect to the appropriate measures of effectiveness, provisional performance requirements, projected threat uncertainties, and operational requirements documents. This program is supported by the Services and DNA's Hard Target Defeat Program described in Section 4.5.4 below.

4.5.3 Counterproliferation Support Program Projects in WMD Counterforce. The Counterproliferation Support Program is supporting several projects in this area, including: 1) developing sensors for target identification, BDA, and collateral effects monitoring (including the TUGS, FLIR, and WBS systems described in Section 4.4); 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 an advanced penetrating weapon, the Advanced Unitary Penetrator (AUP), for underground target defeat; 5) developing a Hard Target Smart Fuze (HTSF) for enhanced lethality of penetrating weapons against underground targets; 6) developing advanced warheads/payloads for enhanced lethality and functional kill against WMD targets; 7) developing BW/CW agent defeat mechanisms; 8) developing the inertial terrain-aided guidance (ITAG) all-weather weapon guidance package designed to be compatible with existing munitions; 9) developing the Munitions Effectiveness Assessment (MEA) and the Integrated MEA (IMEA) targeting tools to assist in targeting, weaponeering, and strike planning against WMD targets; and 10) integrated operational testing, as part of the Counterproliferation ACTD, to support the rapid fielding of these new capabilities. The DOE National Laboratories are also providing technology R&D and technical support to the ITAG project. Counterproliferation Support Program projects in WMD counterforce are further summarized in Table 4.6 below and in Appendix C (Table C.1).

Key accomplishments in WMD counterforce projects include: 1) accurate prediction of atmospheric transport of hazard plumes during ACTD Phase I demonstrations and successful completion of a U.S. European Command (USEUCOM)-sponsored field demonstration of integrated hazard prediction tools in support of collateral effects assessment; 2) conducted sled and flight tests of the HTSF and initiated design and penetration studies in support of AUP development; 3) completed initial design of the line payout system for the weapon borne sensor; 4) selected the GBU-15 airframe for the ITAG system; 5) validated computer simulation of the High Temperature Incendiary (HTI) enhanced payload; 6) fielded MEA/IMEA and delivered initial target planning tools to USEUCOM users, including for current use in Bosnia as part of Operation Joint Endeavor; 7) conducted field tests to assess stored BW/CW agent response and plume development in support of agent neutralization and collateral effects analyses; and 8) under the Phase I ACTD test regime, completed static detonation and live weapon drops on a simulated BW storage facility to demonstrate the capabilities of target planning tools and Phase I technologies.

4.5.4 WMD Counterforce Programs Strongly Related to Counterproliferation. Service and DoD Agency programs are also addressing counterproliferation ACEs in WMD counterforce. These programs are described below.

Service Programs. The joint Service Hard and/or Deeply Buried Target Defeat Capability acquisition program, described in Section 4.5.2, is a new start for FY 1996. The Air Force is also funding an Agent Defeat Weapons Study initiated in response to a Combat Air Forces Mission Need Statement. The objectives of the current Phase 0, Concept Exploration and Definition, acquisition activity are to evaluate means to defeat BW and CW agents and deny access or freedom of use for the delivery platforms associated with BW/CW warheads. All concepts are to minimize collateral effects and be deliverable with current Air Force platforms. Additional information is provided in Table 4.6 and in Appendix C (Table C.5).

DNA Hard Target Defeat Program. DNA initiated the Hard Target Defeat Program in FY 1996 to: 1) evaluate the hard target defeat problem end-to-end, from detection through attack to BDA; and 2) develop improved tactics and technologies to defeat hard targets, especially tunnels. This program supports the OSD/Defense Acquisition Board HDBTDC acquisition program (described above) with weapon-target interaction analyses for defeating those classes of targets that are difficult to counter because of physical hardness and/or the risk of collateral effects associated with the release of hazardous materials. This program employs existing analysis tools and data bases to determine the physical and functional vulnerability of high value/high risk targets and provides quantitative results to support COEAs. This effort also complements and supplements the WMD counterforce activities supported by the Counterproliferation Support Program, including the Counterproliferation ACTD. Additional project details are provided in Table 4.6 and in Appendix C (Table C.8).

DNA Weapons Systems Lethality Program. The Weapons Systems Lethality Program focuses on the development and validation of methodologies and research tools for applied analysis performed under the Hard Target Defeat Program and the Counterproliferation Support Program. The program also maintains a core competency in nuclear phenomenology and provides direct

support to the U.S. Strategic Command and the U.S. Space Command to ensure optimum effectiveness of U.S. and North Atlantic Treaty Organization (NATO) forces in a nuclear conflict. The program includes development of advanced numerical methods and precision subscale testing to develop and validate methodologies associated with weapon - target interaction, transport and

Table 4.6: Key DoD Counterproliferation Programs in WMD Counterforce

Program/Project Title	Project Description	CP ACE	Agency	FY97 Budget [$M]	PE No.
• CP Support Program • Battlefield Surveillance Projects	• See Section 4.4	(See Section 4.4)			
• Collateral Effects Phenomenology Assessment	• Source term characterization and transport prediction, phenomenology experiments, and assessment tool development	8,4	DNA	7.991	603160D
• Advanced Weapons Systems (AUP, HTSF, and ITAG)	• Development of an enhanced penetrating munition for underground target defeat with expanded compatibility with delivery platforms and an all-weather capability	4	DNA Air Force DOE	9.096	603160D
• Enhanced Weapon Payloads for WMD Target Defeat	• Development of a high temperature incendiary weapon payload	4,9	DNA Air Force	5.051	603160D
• BW/CW Agent Neutralization Weapons	• Development of BW/CW agent defeat mechanisms	9,4	DNA Air Force	2.829	603160D
• WMD Target Response and Vulnerability Assessment	• Experimental and analytical analyses of WMD target response/vulnerability and automated target planning for WMD targets	8,4, 12 13	DNA	2.830	603160D
• Counterproliferation ACTD	• Integrated operational testing to support early deployment of new capabilities	4,5,8,9 13,1	DNA EUCOM	10.488	603160D
• Strongly Related CP Programs • Hard and/or Deeply Buried Target Defeat Capability	• End-to-end evaluation and development of capabilities to defeat hard and/or deeply buried targets	4,5,8 12	Services DNA OSD	5.000	Joint Service PE pending
• Air Force Agent Defeat Weapons Study	• Develop capabilities and munitions concepts to defeat BW/CW agents	9	Air Force	0.100	pending
• DNA Hard Target Defeat	• End-to-end evaluation and development of improved tactics and technologies for hard target defeat and collateral effects mitigation	4,8	DNA	4.135	602715H
• DNA Weapons Systems Lethality	• Evaluation of weapon lethality, assessments of collateral effects, and core competency in nuclear weapons effects	4,8	DNA	15.000	602715H
• DARPA Sensor and Exploitation Systems Program	• Develop sensors to defeat camouflage, concealment, and deception practices and provide near real-time semi-automatic exploitation of wide area imagery to track critical mobile targets	11,5	DARPA	69.201	603226E
• DARPA Information Integration Systems Program	• Development of an integrated, all-source, geographically referenced battlefield knowledge base and information distribution system for enhanced real-time situation assessment	11,5	DARPA	67.914	603226E

dispersal of hazardous (collateral effects) materials, and nuclear weapons effects phenomenology. Additional project details are provided in Table 4.6 and in Appendix C (Table C.8).

DARPA Sensor, Exploitation, and Information Integration Systems Programs. These RDT&E programs are designed to improve capabilities to detect, identify, and track high value, time critical fixed and mobile targets, including mobile WMD-armed missile launchers and WMD facilities, by focusing on: 1) developing sensors to defeat camouflage, concealment, and deception practices; 2) providing near real-time exploitation of wide area imagery; and 3) developing an integrated, all-source, geographically referenced battlefield knowledge base and information distribution system to enhance situational awareness. Key accomplishments include: 1) test data collection using ultra-wide band synthetic aperture radars to support the design of a foliage penetrating (FOPEN) radar; 2) demonstration of a new suite of target recognition algorithms that achieve high detection probabilities with low false alarm rates; 3) integration of a single intelligence source correlator; and 4) functionality demonstration of a global broadcast service and information servers for rapid dissemination of imagery products to the users. Additional project details are provided in Table 4.6 and in Appendix C (Table C.7).

4.6 Status and Accomplishments of DoD Programs in Active Defense

4.6.1 Introduction and Summary of Relevant Counterproliferation ACEs. An important role of active defense is to protect U.S., allied and coalition forces, and noncombatants from WMD by intercepting and destroying WMD-armed ballistic missiles, cruise missiles, and aircraft. Active defense, particularly theater ballistic missile (ACE priority 3) and cruise missile defense (ACE priority 2), continues to be a top DoD counterproliferation-related priority.

To achieve an active defense capability against missiles armed with WMD in a theater, DoD is developing a theater missile defense (TMD) "family of systems" designed to be a flexible configuration of interoperable systems capable of joint or autonomous operation. This family of systems uses a "plug and play" architecture that the CINCs can select and deploy in a way that best meets their theater-unique needs. This family of systems starts with the current operationally fielded systems of the U.S. Marine Corps (USMC) HAWK and Patriot Advanced Capability - 2 (PAC-2) system which has a limited capability against ballistic and cruise missiles armed with WMD. In the near term, when systems such as the PAC-3 and the Navy Area Defense System (NADS, formerly Navy Lower Tier) are operationally fielded they will enhance the flexibility and capability to counter WMD threats. In the far term, the Navy Theater Wide System (NTWS, formerly Navy Upper Tier), the Theater High Altitude Area Defense (THAAD), and boost phase intercept (BPI) systems will complete the "family of systems" capability necessary to counter both today's and future WMD threats.

TMD command, control, and communications (C3) programs will incorporate several important capability upgrades in early warning/dissemination, command and control (C2), and communications interoperability. Early warning/dissemination systems provide improved threat missile launch and impact point accuracy determinations and reduced information flow timelines to the warfighter. Upgrades in C2 will facilitate the passing of timely intelligence data into advanced

decision and planning aids for the joint TMD operation centers. Attack operations and passive defense operations will be integrated by linking active defense C2 into the Global Command and Control System. Communications interoperability will be enhanced with the incorporation of the Joint Tactical Information Distribution System (JTIDS). JTIDS will provide a shared situational awareness among the joint mission commanders enabling a joint/allied interoperability with seamless warning, cueing, and weapon coordination. This is especially critical when countering and interdicting mobile, WMD capable, theater ballistic missile (TBM) launch systems and their supporting infrastructure.

Effective boost phase defense, where intercept occurs over the launching country, may serve to minimize the impact of collateral NBC effects on U.S. forces, allied and coalition 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. These include advanced kinetic kill vehicle and high-power airborne laser technologies. 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.

The Operational Requirements Document for Patriot PAC-3, THAAD, and NADS call for the ability to defend against both ballistic and cruise missiles (as well as against other air breathing threats). While the specific technical requirements may be different, the operational planning, concept of operations, and interoperability requirements with other force elements are expected to be common for ballistic and cruise missile defense. For example, the design and development requirements for battle management/C3 (BM/C3), radar/sensor target acquisition and tracking, and the interceptor missile for ballistic missile defense are significantly applicable and transferable to cruise missile defense requirements.

Several Ballistic Missile Defense Organization (BMDO) programs involving international cooperation, consultation, and, in some cases, joint development are underway with the governments of several U.S. allies and friendly nations. These international programs serve to enhance the credibility of both the U.S. and our allies to deter WMD use and may serve to dissuade rogue nations from pursuing the acquisition of WMD. One program, the Medium Extended Air Defense System (MEADS) has a Statement of Intent from the Governments of Germany and Italy to negotiate agreements for cooperation in the project definition, validation, design, development, and production phases of a point defense missile system protecting vital assets and maneuver forces against tactical ballistic missiles, cruise missiles, and other air breathing threats.

The National Missile Defense (NMD) program has shifted from a technology readiness program to a three year acquisition category 1D deployment readiness program to shorten to three years the time to achieve IOC following authorization to proceed with deployment. In summary, several active defense programs support the objectives of the DoD Counterproliferation Initiative and the associated counterproliferation ACEs. These programs are summarized below and in Appendix C.

4.6.2 Counterproliferation Support Program Projects in Active Defense. The Counterproliferation Support Program currently has no projects in the area of active defense.

4.6.3 Active Defense Programs Strongly Related to Counterproliferation. DoD Agency and Air Force programs are addressing counterproliferation ACEs in active defense. These programs are described below.

BMDO Programs. BMDO is currently conducting several TMD programs that are related to countering proliferation, including: 1) demonstration and validation (DEM/VAL), including flight testing, of the THAAD system; 2) engineering development and planning for NTWS; 3) system development, test, and deployment planning for NMD; 4) continuing Engineering Manufacturing Development (EMD) for Patriot PAC-3; 5) modifying the Navy Standard Missile (SM-2 Block IV) and the AEGIS Combat System (ACS) for endoatmospheric engagement of TBMs as part of NADS; 6) supporting international teaming and project definition and validation of the MEADS short range TBM and advanced air defense system; 7) TMD BM/C3 integration, network testing and development; 8) data collection, validation, and analysis for demonstration and evaluation of TMD technologies, components, systems, and programs; and 9) development of supporting technologies and exploratory and advanced development of innovative active defense-related technologies.

Key accomplishments include: 1) flight qualification of 23 sensor and detector technologies for space applications; 2) completion of four THAAD flight tests; 3) completion of the Lightweight Exoatmospheric Projectile (LEAP) flight tests under the NTWS program; 4) completion of a Statement of Intent with Germany and Italy to develop and produce MEADS; 5) validation of flight performance, measurements of flight environments, initiation of fabrication of flight configured seekers, and development of concept of operations (CONOPS) for KKV BPI concepts; 6) shifting of the NMD program from technology readiness to a three year deployment readiness in order to shorten IOC time to three years; and 7) completion of the initial design of ACS modifications and initial lethality testing and analysis for NADS. Additional project details are provided in Table 4.7 below and in Appendix C (Table C.6).

DARPA Air Defense Initiative. In its Air Defense Initiative, DARPA is developing the Mountain Top radar to defend against manned aircraft, cruise missiles, and TBMs. Key accomplishments include development and hardware delivery of surveillance radars in support of the Mountain Top Cruise Missile Defense demonstration. BMDO and the Navy are also participating in this technology demonstration. Additional project details are provided in Table 4.7 and in Appendix C (Table C.7).

Air Force Active Defense Programs. The Air Force is managing four programs in this area: 1) the Theater Missile Defense program which is concentrating on C4I enhancements, improving existing attack operations systems, and performing cost-effectiveness analyses of the Airborne Laser (ABL); 2) the ABL Technology Program which is demonstrating laser beam control technologies and effectiveness against missiles; 3) the ABL DEM/VAL Program which is responsible for developing the integrated ABL system for boost phase defense against TBMs and

Table 4.7: Key DoD Counterproliferation Programs in Active Defense

Program/Project Title	Project Description	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Strongly Related CP Programs					
• BMDO Programs*	• THAAD DEM/VAL and flight testing	3,2	BMDO	269.00	603861C
				212.80	604861C
	• NTWS engineering development			58.17	603868C
	• NMD systems development			508.44	603871C
	• Patriot PAC-3 EMD			381.51	604865C
	• NADS development			60.00	603867C
				241.58	604867C
	• MEADS development			56.23	603869C
	• Joint TMD DEM/VAL			520.11	603872C
	• Technology exploratory/advanced development			94.02	602173C
				132.32	603173C
	• Hawk Procurement			19.38	208863C
	• TMD BMC3 Procurement			19.26	208864C
	• Patriot PAC-3 Procurement			215.38	208865C
	• NADS Procurement			9.16	208867C
• USAF Theater Missile Defense	• Procurement of C4I enhancements, improvements to existing attack operations systems, and cost-effectiveness assessments for the Airborne Laser	3,5	Air Force	22.285	208060F
• Airborne Laser Technology	• Demonstration of laser beam control technologies and effectiveness of lasers against missiles	3,2	Air Force	5.00**	603605F
• Airborne Laser DEM/VAL	• Platform integration and demonstration for BPI against TBMs; study of air and cruise missile defense missions	3,2	Air Force	56.800	603319F
• Space Sensor and Satellite Communication Technology	• Sensor and communications technologies required to support TMD	3,2	Air Force	2.55**	603401F
• Air Defense Initiative	• Development of Mountain Top radar for defense against manned aircraft, cruise missiles, and theater ballistic missiles	2,3	DARPA	21.777	603226E

* See Appendix C, Table C.6, for additional details.
** Generic technology development that applies to counterproliferation and other mission areas.

studying adjunct missions such as cruise missile defense and air defense of high value airborne assets (e.g., AWACS and JSTARS); and 4) the Space Sensor and Satellite Communication Technology program which is developing technologies required to support TMD. Key accomplishments include: 1) completion of software upgrades and an initial prototype expert TMD tracker, a TMD country study for Syria, and a TMD JTIDS message set for AWACS; 2) demonstration of a device to enhance ABL laser power and completion of high altitude measurements of optical turbulence parameters; 3) maintaining ABL on track for transition to DEM/VAL; and 4) completion of a large format focal plane array design for IR space sensor applications. Additional project details are provided in Table 4.7 and in Appendix C (Table C.5).

4.7 Status and Accomplishments of DoD Programs in Passive Defense

4.7.1 Introduction and Summary of Relevant Counterproliferation ACEs. DoD supports an extensive NBC passive defense infrastructure to enable U.S. military forces to survive, fight, and win in CW/BW contaminated environments. The DoD Chemical and Biological Defense (CBD) Program oversees and coordinates all DoD efforts in passive defense. An integrated, balanced program is essential to achieve this objective. U.S. forces must have aggressive, realistic training and defensive equipment that allows them to avoid contamination, and, where contamination cannot be avoided, they must be able to protect, decontaminate, and sustain operations throughout the battlespace environment. They must also have the capability to provide effective medical casualty treatment and management. To address these problems, DoD is funding research, development, and acquisition of: systems to detect, identify, characterize, and provide warning of CW/BW agents (ACE priorities 1 and 6); individual and collective protection gear (ACE Priority 6); methods to advance the speed and efficiency of CW/BW agent decontamination (ACE priority 6); and a broad array of CW/BW medical defense RDT&E activities (ACE priority 6). In addition to these efforts, DoD is pursuing, through the CBD Program, efforts to increase its BW vaccine production capacity and vaccine supplies, and to develop a broader spectrum of new and improved medical countermeasures for CW/BW agents (ACE Priority 7). In cooperation with the CBD Program, the Counterproliferation Support Program is continuing to leverage ongoing CBD programs to accelerate the fielding of critical systems and technologies.

4.7.2 New DoD Initiatives in Passive Defense. Since the CPRC's May 1995 report to Congress, management of passive defense programs under ATSD(NCB) has been restructured. Starting in FY 1997, Counterproliferation Support Program projects leveraging CBD Programs in individual and collective protection and advanced BW/CW point detection technology will be transferred to CBD Program oversight. CBD Program advanced development and DEM/VAL projects in long range standoff BW detection, specifically the Long Range Biological Standoff Detection System (LR-BSDS), the Short Range Biological Standoff Detection System (SR-BSDS), and the BW Remote Detection/Early Warning ACTD, will be transferred to Counterproliferation Support Program oversight. This restructuring will streamline OSD oversight responsibilities and enhance the development and deployment of improved passive defense measures to counter CW/BW battlefield threats. The CBD Program and the Counterproliferation Support Program are continuing to work together to ensure coordination of oversight between the programs.

4.7.3 Counterproliferation Support Program Projects in Passive Defense. With the restructuring of the passive defense programs between the CBD Program and the Counterproliferation Support Program, the Counterproliferation Support Program will now focus its activities on developing and deploying standoff BW detection capabilities and conducting a BW Remote Detection/Early Warning ACTD (field demonstrations will commence in FY 1998). This ACTD is designed to expedite the fielding of remote BW battlefield detection and early warning systems and will act as a bridge to provide an interim capability until the Joint Biological Remote and Early Warning System (JBREWS) can be deployed. JBREWS production is scheduled to start in FY 2003. To these ends, the Counterproliferation Support Program continues to support projects designed to: 1) accelerate (by 5 years) the fielding of an advanced eye safe infrared (IR) lidar, i.e., an improved LR-BSDS, to provide long range battlefield warning of BW use; 2)

determine the effectiveness and military utility of multifrequency ultraviolet (UV) lasers for standoff battlefield detection and identification of BW agents, i.e., an improved SR-BSDS; and 3) as part of the Integrated Biodetection ATD, develop miniaturized BW/CW point detectors with increased sensitivity that are amenable to installation on unmanned aerial vehicles (UAVs) and other delivery platforms to enable remote BW detection and characterization. The Integrated Biodetection ATD will contribute selected technologies to the BW Remote Detection/Early Warning ACTD. The DOE National Laboratories are also involved in passive defense RDT&E under the sponsorship of the Counterproliferation Support Program.

Key accomplishments include: 1) restructuring of the LR-BSDS P3I eye safe lidar development project to reduce overall technical risk and consolidate it with complementary efforts; 2) initiation of prototype production of the eye safe LR-BSDS; 3) feasibility demonstration of a miniaturized UV laser system for the SR-BSDS, along with continuing measurements of UV spectral backgrounds, demonstration of pollen and mold discrimination and bacteriological classification, and initial development of discrimination recognition algorithms; 4) continued development and testing of miniaturized BW detectors in preparation for technology downselects in FY 1997; and 5) development of a miniature air sampler and wind tunnel and flight testing on a research UAV. Additional details of the Counterproliferation Support Program passive defense projects are provided in Table 4.8 below and in Appendix C (Table C.1).

4.7.4 DoD's Chemical and Biological Defense Program. The National Defense Authorization Act for Fiscal Year 1994, Public Law No. 103-160, Section 1703, mandates the consolidation of all DoD NBC defense programs under a single office within OSD. The ATSD(NCB) is the designated focal point within OSD for the CBD Program. This law has been a critical tool for ensuring the elimination of redundant programs, focusing funds on program priorities, and enhancing readiness. To date, there has been a consolidation of the research, development, and acquisition organizations for NBC defense, including the consolidation of all RDT&E and procurement funds. There has been significant progress in the development of joint training, doctrine development, and requirements generation. Modernization and technology plans have been developed which should begin to show real savings and true consolidation of efforts among the Services. Detailed descriptions of the management, plans, accomplishments, and systems under the CBD Program can be found in the *Department of Defense Nuclear/Biological/ Chemical (NBC) Warfare Defense Annual Report to Congress*, published in April 1996.

All RDT&E projects within the CBD Program are structured within the six Program Elements (PE) for: Basic Research, Exploratory Development, Advanced Development, DEM/VAL, EMD, and RDT&E management support. Procurement funds have also been consolidated. Highlights of key programs strongly related to counterproliferation within each of these programs elements are described below. Additional details, including FY 1997 budget profiles, are provided in Table 4.8 below and in Appendix C (Table C.2).

Chemical and biological defenses are conducted within the framework of three principles: 1) contamination avoidance, 2) force protection, and 3) decontamination. These principles provide the basis for an integrated and balanced CW/BW defense program. Contamination avoidance is the

highest priority area and consists of capabilities and procedures to detect, identify, and warn forces of CW/BW threats in order for commanders to determine the appropriate protective posture to assume and provide the necessary information to avoid contamination. When contamination cannot be avoided, force protection provides capabilities to survive, fight, and win in an NBC contaminated environment. Force protection consists of three elements: individual protection, collective protection, and medical programs. Finally, decontamination provides critical capabilities to allow the sustainment of operations in a contaminated environment. Key accomplishments in each commodity area are described in what follows.

Contamination Avoidance. Multiple systems are either under development, in production, or have been fielded for early warning, point detection, and warning and reporting of CW/BW threats. Over the past year, there have been several accomplishments in contamination avoidance research, development, and acquisition programs.

Science and Technology Base – Basic Research, Exploratory Development, and Advanced Development. Basic research efforts included obtaining fundamental information in support of advanced systems for the detection of chemical, biological, and toxin agents, including examination of surface adhesions, construction of the single particle scattering instrument, and measurement of the fluorescence of biological particles in the natural background. *Exploratory Development* efforts included: 1) projects to reduce the size, complexity, false alarm rate, and power requirements of CW/BW agent detectors; 2) defining the interaction of agent clouds with complex structures; 3) evaluating BW agent point detection technologies; 4) evaluating bio simulant field trials of BW agents along with a passive IR standoff detector; 5) field testing a developmental tunable UV laser standoff detector; 6) completing antibody development concepts for detector kits and sensors; 7) testing, in realistic field trials, a small, lightweight (< 1 lb) prototype Individual Soldier Chemical Detector; and 8) expanding incorporation of CW/BW environments, equipment, and effects into advanced wargames and enhanced resolution Distributed Interactive Simulation scenarios. The key *Advanced Development* project was the Integrated Biodetection ATD, which is developing advanced point biodetection sensors to meet a variety of warfighting needs and enhance protection against BW agents. In addition, concepts for the Lightweight NBC Reconnaissance System (NBCRS) were approved for the Marines.

Demonstration/Validation. Key programs in DEM/VAL include: 1) the Lightweight Standoff Chemical Agent Detector (LSCAD) which provides chemical agent detection and mapping for chemical agent clouds; 2) the Chemical/Biological Mass Spectrometer (CBMS) which detects a wide variety of CW/BW agents and is planned to become a component of the XM93E1 FOX NBCRS and the Biological Integrated Detection System (BIDS); and 3) the BW Remote Detection/Early Warning ACTD, a new start in FY 1996 to provide U.S. forces with the earliest possible warning of BW attack and provide a bridge between current capabilities and the objective JBREWS and for which concept evaluation studies are already underway. BIDS integrates a full BW agent detection and identification system into a single High Mobility Multi-Purpose Wheeled Vehicle (HMMWV or "Hum Vee") shelter and is currently the Army's primary system for BW detection in an operational theater. The FOX NBCRS is a dedicated system of NBC detection, warning, and sampling equipment integrated into a high speed, wheeled, high mobility armored

vehicle capable of performing NBC reconnaissance on primary, secondary, and cross country routes throughout the battlefield and in support of armored maneuver forces.

Engineering and Manufacturing Development. There are several key programs in EMD that promise to offer greatly improved capabilities in the near term for contamination avoidance. Key programs include: 1) the Automatic Chemical Agent Alarm (ACADA) which is more sensitive and responsive than current detectors and is capable of concurrent nerve and blister agent detection; 2) the Multipurpose Integrated Chemical Agent Detector (MICAD) which automates NBC warning and reporting throughout the battlefield and links digital data into the Army's C3 system; 3) the XM93E1 FOX NBCRS for battlefield NBC detection; 4) the AN/UDR-13 Pocket Radiac Set which provides ground troops with a lightweight, user friendly tactical device for measuring and detecting radiation; 5) the Advanced Airborne Radiac System (AARS) to provide rapid, accurate, and safe measurement of radiation from the air and for correlating airborne readings to ground radiation readings and positions; 6) the CBMS mass spectrometer to identify CW/BW agents; 7) BIDS Pre-Planned Product Improvement (P3I) which will detect a greater number of BW agents more quickly, with greater sensitivity, and offer better connectivity with C3 systems than the BIDS nondevelopmental item (NDI); 8) the Interim Biological Agent Detector (IBAD) which will give the Navy an interim point detection capability aboard ships and is part of their theater protection strategy (25 detector systems will be fielded in FY 1996); 9) the eye safe P3I LR-BSDS which will identify the presence of particulate aerosols at long range with greater sensitivity and safety to the user than the predecessor NDI system currently being procured; 10) the Air Base and Port Biodetection ACTD which will provide comprehensive BW protection for CINC-identified critical assets including everything from a networked BW agent detector array to medical treatments; and 11) the Shipboard Automatic Liquid Agent Detector (SALAD) which will provide the capability to detect liquid chemical agents in a naval environment.

Procurement. Several systems are being fielded to provide new capabilities or improvements over previous systems in BW agent detection and identification. Key systems include the BIDS NDI and the LR-BSDS NDI system. A contingency BIDS platoon has been activated during FY 1996 and is mission ready. The first unit equipped with the LR-BSDS NDI will also occur in 1996, providing U.S. forces for the first time with a significant standoff BW detection capability.

Force Protection. Over the past year, there have been several accomplishments in all phases of the research, development, and acquisition of individual protection programs.

Science and Technology Base – Exploratory Development. Key tech base efforts to improve force protection include: 1) developing technologies that reduce the severe heat burden created by the protective overgarment; 2) simplifying the extensive and expensive carbon filter change out procedures and disposal required by current collective protection systems; 3) improving communications and operations in protective ensembles; 4) enhancing protection systems for masks; 5) integrating advanced mask concepts into 21st century soldier systems; 6) continued development of models to assess performance degradation; 7) continued development of bio-protection test methods; and 8) updating performance rating tables.

Demonstration/Validation. The key DEM/VAL project for improving force protection is the Advanced Integrated Collective Protective System (AICPS) which will integrate new NBC filtration technologies with environmental controls and power source components for tactical and combat systems. AICPS is designed to be integrated into multiple configurations to provide protection for a variety of tactical systems.

Engineering and Manufacturing Development. Key EMD projects for improving force protection include development of the XM45 Aircrew Protective Mask (ACPM) which provides rotary-wing air crews with a less burdensome respiratory protection system, the AICPS, the M40 P3I Mask, and the M20 Collective Protection System P3I. One of the major programs which promises to be fielded in the near-term is the Joint Service Lightweight Suit Technology (JSLIST) individual protective garment. JSLIST is a joint Service effort to field a common chemical protective ensemble (suit, boots, and gloves). The program objectives are to provide adequate chemical protection, reduced heat stress, full compatibility with all interfacing equipment, longer wear, launderability, a single technical data package and manual, a split issue feature to improve fit and reduce inventory, and flame retardancy. JSLIST promotes commonality and standardization to maximize the effectiveness of resources and eliminate redundancy among the Services.

Procurement. The key procurement program for FY 1997 is the fielding of the M40/M42 protective masks.

Medical Programs. Over the past year, there have been several accomplishments in the development of medical countermeasures against CW/BW agents. Medical countermeasures fall into three basic categories: prophylactic (preventative), therapeutic (post-exposure), and diagnostic. Key accomplishments of prophylactic countermeasures include the continued development of advanced vaccines for anthrax, botulinal toxoids, ricin toxoid, Venezuelan equine encephalitis (VEE), and plague; studies of biological scavengers for nerve agents; and cyanide pretreatment. Key accomplishments of therapeutic countermeasures development include: further development of a reactive topical skin protectant for protection against nerve and mustard agents; development of a nerve agent multi-chambered auto-injector (to replace the multiple injections currently required); and the institutionalization of two courses for military medical personnel: *Medical Management of Biological Casualties* and *Medical Management of Chemical Casualties.* The key accomplishments for diagnostic countermeasures are the continued development of a forward deployable diagnostic kit which will allow immediate diagnosis of BW-related casualties in the field. This kit includes technologies, still in development, which will provide rapid identification of BW agents.

DoD's Biological Defense BW Vaccine Acquisition Program. DoD has made significant progress in the BW vaccine acquisition program during the past several years. DoD now has a solid acquisition strategy that is based on comprehensive analyses, and a Request for Proposals (RFP) will be released to industry this fiscal year. Anthrax vaccine production is currently underway.

The U.S. Army conducted several studies that addressed acquisition alternatives for establishing an adequate vaccine production industrial base, and in 1994 a cost/benefit analysis

concluded that a contractor-owned, contractor-operated (COCO) production facility approach was the best. In 1995 a draft RFP for BW vaccine production was released for industry comment, and responses indicated the need for a broad, long term commitment from DoD to ensure success in such a unique medical product program. A 1995 economic study highlighted the risks of taking the dozen vaccine products developed by DoD through the Food and Drug Administration (FDA) licensing process and into production. The greatest risks were the instability of DoD requirements for the products and the capability of the manufacturer to accrue the appropriate scientific and manufacturing data to support the FDA licensing process. While there may be some deficiency in manufacturing capacity for botulinum vaccine, most vaccine production requirements could be met with existing facilities.

Based on industry responses and the economic study, a revised acquisition strategy was developed, this time for a prime systems contractor approach. The prime contractor would serve as an integrator for all of the processes associated with licensing, producing, storing, and testing biological defense medical products developed under DoD programs. This approach promises to provide a much more efficient management approach than the COCO approach, allowing subcontractors access to commonly needed resources. Equally important, the contractor/ manufacturer would serve as the agent responsible to the FDA for product licensure, a role that DoD cannot assume. The USD(A&T) signed an Acquisition Decision Memorandum on May 2, 1995 directing the use of a prime systems contractor for the acquisition of biological defense medical products. This Acquisition Decision Memorandum also directed that the Vaccine Acquisition Program be included in the POM funding submission for FY 1997 through FY 2001. This approach was approved by the Deputy Secretary of Defense.

A licensed anthrax vaccine is available from the Michigan Department of Public Health for use in those individuals considered at risk of exposure. Production for this licensed vaccine is ongoing to meet DoD's required stockpile needs. Efforts to seek FDA licensing for a limited supply of botulinum vaccine are also ongoing. Once the prime systems contract is awarded in the first quarter of FY 1997, priority will be given for the development and production of the botulinum vaccine to meet stockpile requirements and for the development and production of other medical products to protect against other validated BW threat agents.

Decontamination. Over the past year, there have been several accomplishments in decontamination development programs.

Science and Technology Base – Exploratory Development. Research continues into various methods and technologies for the decontamination of the full spectrum of CW/BW agents using non-aqueous, non-corrosive decontaminants. Efforts also focus on the decontamination of sensitive equipment and the development of concepts to decontaminate large areas, such as air bases or ports.

Engineering and Manufacturing Development. The key EMD projects are the Modular Decontamination Systems (MDS) and development of a sorbent decontaminant, which may provide a non-aqueous replacement to the current decontaminant (denoted as DS2) and, by reducing the

need for water, considerably reduce the logistics burden associated with current decontamination methods.

Chemical and Biological Defense – Management and Support. The primary program supported within this element is the Joint Chemical/Biological Contact Point and Test Program located at Dugway Proving Ground, Utah. This program provides assessments, laboratory analyses, and field tests on a wide variety of equipment that has been fielded or is in production. The results of these efforts provide input to the Services for development of doctrine, policy, training procedures, and feedback into the RDT&E cycle. Accomplishments include completion of a Source Book on a variety of chemical, biological, and toxic agents, and the evaluation of protection provided by existing defensive equipment against emerging CW/BW threat agents. In addition, funding has been provided for management support for the overall integration and coordination of the DoD NBC Defense Program. Activities include: joint requirements, training, and doctrine development by the Joint Service Integration Group; joint modernization planning; development of a joint POM; and joint research, development, and acquisition planning by the Joint Service Materiel Group.

The Joint Program Office for Biological Defense (JPO-BD). The JPO-BD was established to provide centralized management of specified BW defense acquisition programs. JPO-BD managed projects include procurement of the BIDS NDI and P3I systems, the LR-BSDS NDI and P3I systems, the BW Vaccine Acquisition Program, and developing a Port and Airbase BW Defense ACTD. The JPO-BD is supporting the Counterproliferation Support Program in developing improved capabilities for early warning of BW agent attack, including development of the eye safe LR-BSDS P3I upgrade, improving and adapting point BW agent detectors for remote detection applications, and conducting the BW Remote Detection/Early Warning ACTD to expedite the fielding of these systems.

CBD Program FY 1997 Procurement Plans. The FY 1997 procurement plan continues to field new CBD equipment and initiates procurement of additional improved CBD equipment.

Within the ***contamination avoidance*** mission area a number of procurement activities are planned. Procurement for the Improved Chemical Agent Monitor (ICAM) a radically improved version of the already-fielded Chemical Agent Monitor, continues under a multi-year contract. Initial procurement ACADA began in FY 1996. ACADA provides for the first time a point detection capability to detect blister agents. In addition, it provides improved sensitivity, improved response time, interference rejection, and is programmable for all known CW threat agents. FY 1997 funding continues modifications to the FOX NBCRS. The modifications add first time capabilities for standoff CW agent detection and communications links to the digitized battlefield. Procurement of the AN/UDR-13 Pocket Radiac, which provides the first ever capability to both detect and indicate prompt and residual radiation doses received by troops, continues in FY 1997. Initial procurement for two new/improved detection systems for naval surface ships is scheduled to start in FY 1997. The Improved Point Detection System (IPDS) replaces the older Chemical Agent Point Detection System and provides expandable point detection of CW vapor agents. SALAD provides an automatic ship-board capability for detection of liquid chemical agents. Funding is also

provided to produce 36 BIDS P3I systems in FY 1997 to provide an improved detection and identification capability of BW agents within the theater of operations.

Within the ***individual protection*** mission area a number of procurement activities are planned. The M40A1/M42A2 protective masks procured with FY 1997 funding will allow continued replacement of the aging masks currently in the field. FY 1997 funding also procures additional M41 Protection Assessment Test Systems (PATS) that ensure proper mask fit and functionality. FY 1997 procurement funding initiates the Army purchase of a completely new aircrew mask, the ACPM. This mask radically improves flight safety and provides full compatibility with night vision goggles and weapon sighting systems while improving aircrew comfort. In addition, funding is provided for initial procurement of the Chemical/Biological Respiratory System a new aircrew respiratory system for Navy and Marine Corps tactical, rotary wing, and land based fixed wing aircraft. Full rate production of the JSLIST individual protection garment will begin in FY 1997.

Within the ***collective protection*** mission area, FY 1997 funding supports continued procurement of the Chemical Biological Protective Shelter (CBPS), a highly mobile, self-contained collective protection system which can provide a contamination free working area for medical and other selected units.

4.7.5 Other DoD Passive Defense Programs Strongly Related to Counterproliferation. The CBD Program is the focal point for joint Service passive defense programs. Other DoD Agency and Service programs also contribute to the counterproliferation ACEs in passive defense, particularly in the area of nuclear safety and survivability. These programs are described below.

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 WMD threats and counterproliferation training support. Key accomplishments include: 1) supporting multiple Service test program requirements; and 2) initiated development of a survivability integration program, including counterproliferation studies and assessments for the U.S. Pacific Command and the U.S. Central Command and theater missile defense requirements studies. Additional project details are provided in Table 4.8 below and in Appendix C (Table C.8).

DARPA Initiative in BW Defense. DARPA is conducting basic research to develop and demonstrate technologies that will minimize the impact of BW on U.S. military operations. Under an MoU with the ATSD(NCB), DARPA had worked closely with the Counterproliferation Support Program and now, since the reorganization of passive defense programs within OATSD(NCB), is working closely with the CBD Program in these efforts. Key accomplishments to date include: 1) developing a miniaturized BW agent detector and integrating it into an UAV platform for testing; and 2) demonstrating the operational capability of a living, biological, neuron-based, agent nonspecific toxin sensor. Additional project details are provided in Table 4.8 and in Appendix C (Table C.7).

Table 4.8: Key DoD Counterproliferation Programs in Passive Defense

Program/Project Title	Project Description	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **CP Support Program** • Long Range Eye Safe LR-BSDS P3I	• Accelerated deployment (by 5 yrs) of full Army complement of airborne eye-safe IR lidar for battle-field BW/CW agent aerosol detection and track	1,6	JPO-BD Army	15.181	603884BP
• UV Lidar for BW Identification (SR-BSDS)	• Enhanced RDT&E of UV lidar technology for remote BW identification	1,6	JPO-BD Army	5.260	603884BP
• BW Remote Detection/Early Warning ACTD and Advanced BW Detector Technology Development	• Enhanced RDT&E to demonstrate and rapidly field selected BW agent detectors integrated into UAV, man-portable, and other platforms for remote detection and characterization of BW agents	1,6	JPO-BD DARPA	7.881	603384BP
• **Strongly Related CP Programs** • CBD Program	• RDT&E and procurement of systems and equipment for NBC agent detection and warning, individual and collective protection, medical response (including vaccine R&D), and decontamination	6,1,7	Services JPO-BD	443.337	Various*
• BW Vaccine Acquisition Program (part of the CBD Program)	• Acquisition strategy revised and RFP in process to select a prime contractor to meet DoD BW vaccine production needs; advanced development and DEM/VAL support	7	JPO-BD Army	37.038	603384BP 603884BP 604384BP procurement
• DARPA Initiative in BW Defense	• Basic research to develop and demonstrate technologies that will minimize the impact of BW on military operations	1,6	DARPA	20.000	601101E
• DNA Test and Simulation Technology	• Simulators and simulator technology to validate weapon systems operability in nuclear environments	6	DNA	23.502	602715H
• DNA Weapons Safety and Operational Support	• Force survivability assessments against WMD weapons and counterproliferation training	8,6,2,3 11	DNA	2.085	602715H
• Navy Radiological Controls	• RDT&E of radiation monitoring equipment	6	Navy	2.886	603542N

* See Appendix C, Table C.2 for additional information.

Navy Radiological Controls Programs. The Navy's Radiological Controls program provides RDT&E of radiation detection and monitoring equipment for Navy and Marine Corps use. Key accomplishments include production of a multifunction Radiac, completion of EMD for laser dosimetry, and initiating EMD for an underwater Radiac. Additional project details are provided in Table 4.8 and in Appendix C (Table C.4).

4.8 Status and Accomplishments of DoD Programs to Counter Paramilitary, Covert Delivery, and Terrorist WMD Threats

4.8.1 Introduction and Summary of Relevant Counterproliferation ACEs. DoD is actively pursuing several activities to counter paramilitary and terrorist-related (covert) production and delivery of WMD. These efforts include supporting, training, and equipping joint SOF, explosive ordnance disposal (EOD), and NBC weapon response teams to detect, neutralize, and

render safe WMD devices in permissive and nonpermissive environments both in the U.S. and overseas (ACE priorities 12 and 13). The two DoD mission documents guiding these efforts are the CJCS's *Counterproliferation 0400 CONPLAN* and the *Counterterrorism 0300 CONPLAN.* These documents delineate user requirements and ensure "demand pull" of technology development activities. The governing interagency document for counterterrorism is Presidential Decision Directive - 39, dated June 1995.

4.8.2 New DoD Initiatives to Counter Paramilitary, Covert Delivery, and Terrorist WMD Threats. In support of the *Counterterrorism 0300 CONPLAN* and the *Counterproliferation 0400 CONPLAN*, the ATSD(NCB) on behalf of the Counterproliferation Support Program has recently signed a Memorandum of Agreement with USSOCOM and is finalizing a Terms of Reference with ASD(SO/LIC). These agreements will facilitate closer cooperation among the organizations and will streamline the process of responding to the requirements of CINCSOC, DoD, and interagency organizations to counter threats form WMD-armed terrorists and covert and paramilitary forces. These agreements focus on leveraging BW/CW defense technologies to accelerate their fielding and adapt them to the special operations environment. Accelerating technology development will also help to address critical technology shortfalls of Service units tasked with WMD-related missions, such as the Army's Technical Escort Unit, DoD's Defense Technical Response Group (DTRG), and the Army's 52nd Ordnance Group. This initiative will also facilitate the transfer of DoD developed technologies to other interagency response groups within U.S. Intelligence, the FBI, the Secret Service, U.S. Customs Service, and the Department of State. Since counterterrorism is an integrated interagency process, technology initiatives will be coordinated through the Technical Support Working Group (TSWG) which develops joint interagency counterterrorism requirements.

4.8.3 Counterproliferation Support Program Projects to Counter Paramilitary, Covert Delivery, and Terrorist WMD Threats. The Counterproliferation Support Program is coordinating its technology prototype development activities in this functional area with the TSWG, USSOCOM, and joint Service EOD units to ensure relevance and responsiveness in meeting user needs. The DOE National Laboratories are also contributing to these projects. Additional project details are discussed below, in Table 4.9, and in Appendix C (Table C.1).

The Counterproliferation Support Program is working closely with the TSWG to develop special technologies that support U.S. and allied efforts to counter paramilitary and terrorist WMD threats. These efforts focus on developing an effective response to BW/CW threats, emphasizing capabilities peculiar to the interagency emergency response. Projects underway co-sponsored with the TSWG include: development of: 1) BW/CW perimeter monitoring sensors; 2) a vented suppressive shield to contain explosive effects and BW/CW agent dispersal; 3) a BW agent test kit for field identification of BW agents; 4) a compact, long shelf-life "Quick Mask" for protection against BW/CW agents to be used by on-site civilian support teams and such agencies as the Secret Service; and 5) a joint U.S. - Canadian EOD suit for such units as the Army's Technical Escort Unit and the 52nd Ordnance Unit, which must work safely around and defuze explosive devices that might contain BW or CW agents.

The Counterproliferation Support Program is funding a wide range of specialized SOF technology prototype development projects to detect, disable, render safe, and, if necessary, recover critical components from WMD devices in a nonpermissive environment. Technology prototypes under development include: 1) a nonintrusive CW agent detection system based on swept frequency acoustic interferometry (SFAI) that can accurately determine the presence of and identify CW agents in situ without requiring direct sampling of the agent; 2) a drill extractor that enables rapid sampling of suspected CW or BW containers without releasing the contents; and 3) a SOF-specialized version of the fiber optics wave guide (FOWG) BW detector for rapid identification of sampled BW agents.

The Counterproliferation Support Program is also funding, in cooperation with Navy EOD organizations, efforts to acquire and preposition specialized equipment for EOD response teams assigned to the geographic CINCs. These teams are likely to be the first on the scene in an incident involving a WMD device. Availability of forward deployed equipment enhances training, operational readiness, and technical response capabilities in countering the full spectrum of WMD threats. In FY 1997, this project will be managed under TSWG activities to ensure more effective management oversight and improved leveraging of EOD technologies within the interagency counterterrorism community.

Key accomplishments for TSWG cooperative projects include: 1) development of a miniaturized tandem surface acoustic wave and ion mobility CW agent sensor combined with a meteorological station for perimeter monitoring; 2) vented suppressive shield testing, prototype development and fabrication; 3) testing of aerosol mitigation techniques; 4) development of a prototype BW agent swab-type test kit; 5) completion of a user survey in support of Quick Mask design and development; and 6) adapting a Canadian BW/CW EOD protective suit to U.S. EOD needs. Key accomplishments for USSOCOM projects include using the SFAI technique to characterize key CW agents and precursor chemicals, validating the SFAI technique on a variety of CW munitions and bulk containers, and completion of an initial SFAI prototype design review to meet SOF operational requirements. The SOF FOWG BW detector and drill extractor projects are new starts in FY 1996. Accomplishments in the Navy EOD equipment prepositioning project include the continuing acquisition and forward deployment of specialized EOD equipment to support training and readiness sustainment.

4.8.4 Programs Strongly Related to Counterproliferation to Counter Paramilitary, Covert Delivery, and Terrorist WMD Threats. DoD Agency and joint Service programs are also addressing counterproliferation ACEs in countering paramilitary, covert delivery, and terrorist WMD threats. These programs are described below.

OSD Counterterror Technical Support Program. The Counterterror Technical Support (CTTS) Program is managed by the ASD(SO/LIC) and addresses the joint interagency requirements developed by the TSWG. The CTTS develops technology and prototype equipment with direct operational application in the national counterterrorism effort. Projects include technology development to support operations involving: hostage rescue; personnel protection; unconventional (e.g., NBC) devices; attacks on installations, infrastructure, and the general populace; and explosive detection and disposal. The CTTS Program responds to multi-agency

requirements and priorities, and many of its constituent projects are co-funded in cooperation with non-DoD emergency response organizations. Current priorities are the detection and neutralization of terrorist-built explosive devices and countermeasures against chemical and biological terrorism. The CTTS Program has been successful in completing several prototype development projects, including: 1) a timer detector capable of detecting mechanical and electronic timers on explosive devices; 2) specialized materials for use in explosive detection training and testing, 3) a hand held Remote Chemical Agent Detector; and 4) a scavenging agent that suppresses the dispersion of BW/CW aerosol particles. Development of diverse products is continuing, including: 1) a three-dimensional x-ray machine; 2) a large volume explosives detection system designed for screening luggage, vehicles, cargo, etc.; and 3) a sophisticated zoom video system for specialized surveillance operations. Additional project details are provided in Table 4.9 and in Appendix C (Table C.9).

OSD Joint Robotics Program. This OSD initiative to consolidate DoD Service and Agency robotics programs is executed under the oversight of the Director for Strategic and Tactical Systems (PDUSD(A&T)(S&TS)). The objective of the program is to demonstrate and validate mature robotics technologies that are adaptable to multi-Service applications, provide an unmanned operational capability in hazardous and contaminated environments, provide improved battlefield efficiency by permitting supervised autonomous operations, and serve to reduce force manpower and support requirements. Telerobotic technologies are under development that enable the performance of missions in hazardous chemical and radiation environments and in situations where there is an explosive hazard (e.g., EOD operations). Key accomplishments include: 1) development testing and completion of the critical design review of the Remote Ordnance Neutralization System (RONS); 2) delivery of five Standardized Teleremote Systems for demonstration testing; and 3) initial testing of several Unmanned Ground Vehicle (UGV) systems for battlefield use and other applications. Additional project details are provided in Table 4.9 and in Appendix C (Table C.9).

OSD Physical Security Equipment Program. This program consolidates related DoD Service and Agency RDT&E programs developing advanced technologies for protecting nuclear and other high value weapons systems and storage facilities. Key accomplishments include: 1) performance testing of commercially available entry control and electronic surveillance devices; 2) installation of the Advanced Entry Control System at Eglin Air Force Base for testing and evaluation; 3) installation a Waterside Security System at the Bangor Submarine Base; and 4) installation of a physical security system aboard three aircraft carriers. Additional project details are provided in Table 4.9 and in Appendix C (Table C.9).

Navy Joint Service EOD Systems and Procedures Programs. The Joint Service EOD Systems Program develops operational prototype EOD systems to handle unexploded ordnance of all types, including NBC munitions. Key accomplishments include: 1) advanced development of a portable field x-ray system; 2) continued development of sensor defeat and high velocity shape charge technologies; and 3) successful demonstration of "disrupter devices" that burn out circuits to dud explosive charges. The Joint Service EOD Procedures Program complements the Joint Service EOD Systems Program by testing and validating EOD prototype systems and developing specialized procedures, including procedures for handling NBC munitions, required for detecting, localizing, and rendering safe unexploded ordnance. This program also funds the Navy component

Table 4.9: Key DoD Counterproliferation Programs in Countering Paramilitary, Covert Delivery, and Terrorist WMD Threats

Program/Project Title	Project Description	CP ACEs	Agency	FY97 Budget [$M]	PE No.
• **CP Support Program**					
• Advanced Technology for Countering BW/CW Threats	• Development of technologies and prototypes to assist SOF/EOD in countering BW/CW threats	13,12	ASD (SO/LIC)	1.717	603160D
• Joint EOD WMD Readiness Sustainment	• Prepositioning of specialized CW/BW EOD equipment	13,12	ASD (SO/LIC)	0.966	605160D
• SFAI CW Characterization System	• Prototype development of nonintrusive detection of containerized CW agents in support of SOF operations	13,12	SOCOM	0.900	603160D
• Specialized SOF Technologies and Prototype Devices	• Development of a drill extractor to remove BW/CW samples without breaching containers, a FOWG BW detector to identify extracted samples, and other special devices	13,12 1,4	SOCOM	5.766	603160D
• **Strongly Related CP Programs**					
• Counterterror Technical Support Program	• Development of technical capabilities and prototype systems and concepts to detect, render safe, and defend against paramilitary, covert delivery, and terrorist NBC threats both in the U.S. and overseas	13,12	ASD (SO/LIC)	16.521	603122D
• Joint Robotics Program	• Consolidates Service/DoD RDT&E efforts to DEM/VAL mature robotics technologies for EOD and other applications	12,13	OSD	23.744	603709D
• Physical Security Equipment	• Consolidates DoD activities for nuclear and other high value weapons protection equipment	12,13	OSD Army	18.676	603228D
• Navy Joint Service EOD Systems Program	• Specialized EOD equipment to detect, locate, and render safe explosive devices, including NBC munitions	12,13	Navy	3.870	603654N
• Navy Joint Service EOD Procedures Program	• Tests and validates prototype EOD systems and develops specialized procedures for EOD units • Funds DTRG technical support unit	12,13	Navy	5.846	604654N

to the Defense Technical Response Group (DTRG), a joint FBI/DoD/DOE contingency unit which mobilizes during incidents involving NBC weapons. The DTRG provides specialized technical support, EOD field procedures, and equipment to counterterrorism units such as selected Service EOD units. The in-service library of EOD field procedures developed under this program consists of over 2,800 EOD bulletins. These bulletins serve as the primary source of information for EOD technicians in the field to aid them in identifying the characteristics, assessing conditions and hazards, and safely eliminating the unexploded ordnance hazards they encounter. Key accomplishments include development, validation, and approval of 49 new EOD field procedures bulletins distributed to EOD units in the field. Additional project details are provided in Table 4.9 and in Appendix C (Table C.4).

Department of the Navy/Marine Corps Chemical/Biological Incident Response Force. On approximately 1 June 1996, at Camp Lejeune, North Carolina, Marine Forces Atlantic will

activate a dedicated unit to respond to chemical and biological incidents (terrorist or otherwise) occurring on Naval installations and Department of State legations worldwide. The USMC Chemical/Biological Incident Response Force (CBIRF) will include approximately 350 Marines and Sailors organized into six elements: a command element, a chemical/biological reconnaissance element, a chemical/biological decontamination element, a medical element, a security element, and a service support element. The initial unit is envisioned as an interim force that will transition to a permanent standing unit later in 1996. As currently envisioned, the CBIRF will have enhanced capabilities for detecting, diagnosing, and treating CW/BW agents through sophisticated equipment, specialized training, and a "reachback" link to civilian scientific and medical experts. The CBIRF may also receive selected immunizations not generally available elsewhere within DoD.

4.9 Summary: DoD's Response to the Counterproliferation ACEs

Table 4.10 serves to summarize DoD's response to the counterproliferation ACEs by matching selected program accomplishments to the primary ACE priority they address.

Table 4.10: DoD's Response to the Counterproliferation ACEs

Counterproliferation ACE	Selected Accomplishments in DoD Counterproliferation Programs
1. Detection, Identification, and Characterization of BW/CW Agents	• Deployed the Biological Integrated Detection System and activated a contingency BIDS platoon, providing U.S. forces with a fielded BW detection capability • Continued deployment of critical CW agent detection systems • Accelerated development of remote BW agent detection systems
2. Cruise Missile Defense	• Provided radar hardware for the "Mountain Top" cruise missile defense demonstration • Technology sharing and synergy with ballistic missile defense programs
3. Theater Ballistic Missile Defense	• Completed 5 THAAD flight tests • Completed initial flight demonstrations of Navy Theater-Wide System • Conducted initial lethality testing of Navy Area Defense System • Demonstrated enhanced laser power for Airborne Laser boost phase intercept system and prepared for demonstration and validation • Completed Statement of Intent with European partners for MEADS • Shifted NMD from technology readiness to 3 year deployment readiness to shorten IOC time • Flight qualified 23 sensor and detector technologies for ballistic and cruise missile defense
4. Detection, Characterization, and Defeat of Underground WMD Facilities	• Conducted field tests of underground WMD facility defeat and collateral effects mitigation in support of the Counterproliferation ACTD
5. Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter	• See Intelligence Annex
6. Robust Passive Defense to Enable Continued Operations on the NBC Battlefield	• Continued deployment of critical NBC battlefield detection and warning systems and individual and collective protection systems • Considerable advances in BW/CW medical defense R&D
7. BW Vaccine RDT&E and Production to Ensure Availability	• Decided on a prime systems contractor acquisition approach to BW vaccine production and released a draft Request for Proposals for industry comment • Began production of anthrax vaccine to meet DoD stockpile needs and screened several BW vaccines for safety and efficacy
8. Target Planning for WMD Targets	• Deployed prototype integrated target planning tools to CINC USEUCOM for use in Bosnia as part of Operation Joint Endeavor
9. BW/CW Agent Defeat	• Conducted initial phenomenology tests as part of the Counterproliferation ACTD (Phase I)
10. Detection and Tracking of WMD and WMD-Related Shipments	• Initiated deployment of prototype Specific Emitter Identification System for tracking ships at sea
11. Prompt Mobile Target Detection and Defeat	• Conducted tests of advanced radars and other sensors for mobile target detection • Demonstrated functionality of C4I systems for rapid dissemination of intelligence to users
12. Support for Special Operations Forces	• Continued development of specialized equipment and prototypes for rapid fielding • Conducted joint training exercises dealing with counter-WMD-related missions • Establishing the USMC Chemical/Biological Incident Response Force
13. Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	• Accelerated development of technologies, prototype systems, and specialized equipment to assist SOF and EOD teams in countering BW/CW threats • Enhanced coordination of Joint Service exercises and readiness sustainment activities
14. Support Export Control Activities of the U.S. Government	• Revised U.S. Export Administration Regulations and reviewed over 10,000 export license application for military and dual-use technologies
15. Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes	• Supported removal and return of all nuclear warheads from Kazakstan to Russia • Secured withdrawal of 63 of 81 SS-25 mobile ICBMs and launchers from Belarus to Russia • Deactivated all SS-24 and half of the SS-19 ICBMs in Ukraine • Established 17 joint business ventures between U.S. companies and FSU defense enterprises • Transitioned over 11,500 FSU scientists and engineers formerly employed in WMD production to more peaceful civilian employment • Continued inspection, monitoring, and escort support for nuclear and chemical weapons arms control treaties • Continued development of a global continuous threshold monitoring network and data fusion knowledge base for CTBT verification

5. DOE Nonproliferation Programs

5.1 Introduction

The objectives of the DoD counterproliferation mission are strongly supported by several nuclear proliferation prevention activities of the DOE. DOE plays a critical role in addressing ACE priorities in detecting and tracking WMD-related shipments (ACE priority 10); defending against and responding to paramilitary, covert delivery, and terrorist WMD threats through its Nuclear Emergency Search Team (ACE priority 13); by supporting U.S. Government export control activities (ACE priority 14); and by supporting inspection and monitoring activities of verifiable arms control agreements and regimes (ACE priority 15). DOE is requesting $411.45 million in FY 1997, compared to $390.78 million in FY 1996, for nonproliferation and proliferation prevention programs. DOE's budget breakdown for FY 1997 is provided in Appendix D.

To reduce the international nuclear proliferation threat, DOE is focusing its resources and expertise on the following near term priorities:

- Detecting and characterizing worldwide production of nuclear materials and weapons;
- Monitoring worldwide nuclear testing;
- Preventing and detecting the diversion/smuggling of nuclear materials;
- Securing nuclear materials, technology, and expertise in Russia and the NIS;
- Limiting weapons-usable fissile materials worldwide;
- Ensuring transparent and irreversible reductions of global nuclear stockpiles;
- Controlling nuclear exports;
- Strengthening the nuclear nonproliferation regime; and
- Maintaining and continuously improving a program for nuclear emergency and nuclear terrorism response.

DOE undertakes various activities, as a member of the Intelligence Community, related to nuclear proliferation intelligence data analysis and treaty monitoring. DOE nonproliferation and proliferation prevention activities are discussed in this section. Joint DOE/U.S. Intelligence activities are discussed in the Intelligence Annex to this report.

5.2 Status and Accomplishments of DOE Proliferation Prevention Programs

5.2.1 Detecting and Characterizing Worldwide Production of Nuclear Materials and Weapons. Under the production detection program, DOE is developing a set of both remote and on-site complementary tools to detect and characterize foreign nuclear materials production activities. Acquisition of special nuclear materials is the most important step for a potential nuclear weapons proliferator to accomplish. The ability to detect production is therefore a very critical proliferation prevention capability, and the ability to detect such production remotely is a powerful deterrent. The CALIOPE (Chemical Analysis by Laser Interrogation Of Proliferation Effluents) program is a major remote sensing effort focused on providing such a capability. The CALIOPE program is composed of a multi-laboratory team with the goal of perfecting laser based remote sensing techniques for trace chemical effluent detection. The CALIOPE system will eventually consist of an airborne sensor system for the detection of chemical species in environments indicative of nuclear materials production. Initial field experiments using prototype equipment met with significant success. Other production detection efforts are focused on the development of a small satellite demonstration system employing multispectral and thermal imaging techniques. Such techniques are useful to detect and monitor such production indicators as reactor cooling pond temperatures, which can be used to estimate plutonium production rates. Image change detection also can be useful in detecting undeclared production related facilities and activities. This effort exploits a unique combination of DOE laboratory expertise in the nuclear weapons production cycle, production signatures, laser systems, rapid prototyping, and satellite systems engineering. Planned funding for production detection activities in FY 1997 is $87.0 million compared to $103.0 million in FY 1996.

5.2.2 Monitoring Worldwide Nuclear Testing. Nuclear test monitoring has been a major component of the DOE Verification and Control Technology program for many years. Experience in developing and deploying systems, in conjunction with DoD, to monitor the Limited Test Ban Treaty (LTBT) and the Threshold Test Ban Treaty has been recently refocused on verifying and monitoring the Comprehensive Test Ban Treaty (CTBT). DOE is developing and delivering elements of a U.S. National Technical Means as well as international monitoring systems for this purpose. DOE has a long standing partnership with DoD in designing and producing nuclear detonation sensor systems deployed on Global Positioning System (GPS) and Defense Support Program (DSP) satellites. These include optical, x-ray, particle spectrometric, and electromagnetic pulse sensor subsystems. Currently, DOE is delivering four GPS flight payloads per year. Development is also underway for the next generation of satellite based nuclear detonation detection sensors to support the CTBT regime. (See also Section 5.4 below.)

Other technical methods development associated with the CTBT involve hydroacoustics, seismology, radionuclide detection and characterization, and infrasound techniques. One focus of the seismic studies is to characterize regional areas of interest to improve the detection of smaller and potentially evasive tests. A product of these studies will be more detailed seismic databases for China and the Middle East, along with associated improvements in discrimination algorithms and specialized automated data processing techniques. This effort draws upon DOE laboratory experience in nuclear testing, mining and seismic geology, field measurements, and data fusion. DOE also is developing a prototype infrasound station for eventual commercial production and

availability to the International Monitoring System. DOE laboratory experience in atmospheric science is especially relevant to this activity. Hydroacoustic monitoring provides yet another complementary tool to detect low yield, potentially evasive testing. DOE is also developing the specifications for an ocean monitoring system. Intermediate accomplishments include signature assessments of evasive explosions and the development of detection system specifications. Radionuclide techniques offer another important tool by providing critical forensic data to support CTBT verification. DOE is developing radionuclide particulate as well as prototype xenon gas samplers for commercialization and use by the International Monitoring System. Planned funding for nuclear test monitoring activities in FY 1997 is $72.0 million, unchanged from FY 1996.

5.2.3 Preventing and Detecting the Diversion/Smuggling of Nuclear Materials. Technology R&D for diversion prevention is focused on securing nuclear material at its source, detecting stolen material in transit, and determining the origin of intercepted material. DOE and National Laboratory personnel are part of an international technical working group to help determine the sources of smuggled nuclear materials. The fundamental approach is to apply the full scope of laboratory forensic methods on intercepted materials. This program exploits multiple expertise in environmental and materials production signatures, radiochemical analysis, and law enforcement support. Planned funding for this activity in FY 1997 is $31.0 million, unchanged from FY 1996.

5.2.4 Securing Nuclear Materials, Technology and Expertise in Russia and the NIS. Two DOE programs comprise this activity: the Materials Protection, Control and Accounting (MPC&A) program and the Industrial Partnering Program (IPP). The MPC&A program is primarily related to materials security and nonproliferation, and the goal of the IPP is to engage scientists and engineers from the weapons institutes of the NIS in peaceful technology applications in order to help stabilize personnel and resources that represent a potential expertise proliferation risk. Funding requested in FY 1997 is $94.4 million for FSU MPC&A activities and $15 million for the IPP effort, compared to FY 1996 funding levels of $85.6 million for MPC&A activities and $10 million for IPP.

The MPC&A Program. The specific objectives of the MPC&A program are: 1) improve material protection control and accounting at Russian and NIS nuclear facilities which contain weapons-usable material; 2) develop with Russian and NIS specialists technical equipment suitable for mass production and distribution in the FSU nuclear complex; and 3) work with national authorities in Russia and the NIS to institute and standardize MPC&A activities across the civil and military nuclear complex.

DOE has been very successful in coordinating technical expert interactions at the government-to-government and laboratory-to-laboratory levels between the U.S. and states of the FSU to implement upgraded fissile material security procedures and technology. Under the MPC&A program, DOE is working to install modern safeguards equipment and to provide technical training at over 35 facilities throughout the Russian Federation and in the NIS of Kazakstan, Ukraine, Belarus, Georgia, Latvia, Lithuania, and Uzbekistan.

Under the government-to-government MPC&A program, DOE is conducting work at over 25 facilities in eight countries. The focus of this work is to enhance rapidly MPC&A for weapons-usable nuclear materials. In FY 1995, DOE assumed executive responsibility for the government-to-government MPC&A program and in FY 1996 began to receive funding directly to carry out this program. In June 1995, DOE entered into a cooperative arrangement with the Russian Federal Nuclear Radiation and Safety Authority (denoted by its Russian acronym as "GAN") to implement a Russian state system for MPC&A. Under this program, MPC&A upgrades will be implemented at six Russian sites; regulatory documents and federal and inspection databases will be developed; inspectors and operators will be trained; and inspection equipment will be provided. At the January 1996 meeting of the Gore-Chernomyrdin Commission, the U.S. and Russia agreed to expand their MPC&A cooperation to six new sites, four of which will receive upgrades under the government-to-government program.

Since the summer of 1994, six DOE laboratories have been actively collaborating with their Russian counterparts to implement an integrated MPC&A plan at Russian institutes. Since the laboratory-to-laboratory program's inception, significant progress has been made in several important areas. Substantial technical work, including physical protection upgrades and demonstrations of MPC&A technology, has been accomplished at the Kurchatov Institute, the Institute of Physics and Power Engineering at Obninsk, the Institute of Experimental Physics (Arzamas-16), and other institutes. The work includes the application of a wide range of physical protection and material control and accounting equipment supplied by the laboratory-to-laboratory program and by Russian suppliers. For example, at Chelyabinsk-70 work has included test and evaluation of nuclear portal monitors, hand-held radiation detectors, and nuclear material accounting systems including bar code systems. The laboratory-to-laboratory MPC&A program now encompasses 14 Russian facilities. Laboratory-to-laboratory activities in the Russian Federation have continued into FY 1996 supported by DOE funds.

Over the life of the MPC&A program, DOE has also established effective working relationships with the Russian Ministry of Atomic Energy (MINATOM), GAN, and the principal Russian institutes within MINATOM. These 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. In addition, work is being undertaken with seven independent civilian nuclear facilities, including the Kurchatov Institute, which has facilitated cooperation on Russian naval nuclear fuel MPC&A.

The efforts of DOE to secure nuclear materials and expertise in Russia and the NIS have expanded rapidly since their beginning. From one site involving 75 kilograms of highly enriched uranium in 1994, the program achieved MPC&A upgrades for over eight tons of plutonium and highly enriched uranium at 26 facilities in 1995. In 1996, planned achievements will involve hundreds of tons of nuclear materials at over 40 facilities. During FY 1997, the intense activity experienced during the past two years will continue as MPC&A upgrades continue at the 17 facilities added during the last six months, and as additional facilities are added under cooperation with the Russian Navy and with other locations and activities in the FSU/NIS.

The Industrial Partnering Program. As stated above, the primary objective of the IPP is to stabilize personnel and resources within the FSU to minimize the risk of proliferation of nuclear weapons expertise. Under the IPP, DOE national laboratories work with Russian and NIS institutes to identify and evaluate the commercial potential of various products related to the R&D activities conducted at the Russian/NIS institutes. Partnerships are then facilitated, ideally through cost sharing arrangements with U.S. industry, to develop specific commercial products. To date, over 200 IPP projects have been initiated, including 175 laboratory-to-laboratory projects (Thrust I) and 32 industry cost-shared projects (Thrust II). These projects have engaged over 2,000 weapons scientists and engineers on various types of projects including those involving, for example, MPC&A, nuclear safety, materials science, biotechnology, and instrumentation.

5.2.5 Limiting Weapons-Usable Fissile Materials Worldwide. The objectives of the DOE fissile material limitation effort are: 1) promote alternatives to the civil use of plutonium; 2) eliminate the civil use of highly enriched uranium; 3) reduce stockpiles of highly enriched uranium and plutonium; 4) initiate regional fissile material control activities; 5) shut down production reactors; and 6) negotiate a fissile material cutoff convention. Funding requested for this activity in FY 1997 is $16.6 million, up from $8.7 million in FY 1996.

In 1996 activities are continuing which provide technical support for International Atomic Energy Agency (IAEA) inspections of U.S. excess fissile material, the research reactor reduced enrichment program and fissile material cutoff negotiations, and completed compliance measure negotiations for Russian plutonium reactor shutdown and plutonium storage. Efforts in 1997 will include continued support for: 1) a Russian plutonium production reactor core conversion and storage regime; 2) IAEA inspections of excess U.S. fissile materials; and 3) the research reactor reduced enrichment program and completion of the fissile material cutoff convention negotiations.

5.2.6 Ensuring Transparent and Irreversible Reductions in Global Nuclear Stockpiles. The objectives of DOE's nuclear stockpile reduction program are: 1) exchange and confirm data on inventories; 2) monitor nuclear warhead production and expedite dismantlement of excess weapons; 3) conduct reciprocal inspections of nuclear components and materials; 4) purchase 500 metric tons of highly enriched uranium from dismantled warheads; and 5) expand weapons reductions. Funding requested for this activity in FY 1997 is $4.0 million compared to $5.8 million in FY 1996.

Activities in 1996 and 1997 support dismantlement technical exchanges with Russia; continuing negotiations on safeguards, transparency, and irreversibility of nuclear weapon dismantlement; and highly enriched uranium purchase transparency negotiations. Planned activities for 1997 are: 1) working toward conclusion of the Stockpile Data Exchange Agreement and highly enriched uranium mutual reciprocal inspection demonstration; 2) initiation of spot check negotiations to confirm declarations; and 3) continued technical support for Russian highly enriched uranium purchase transparency.

5.2.7 Controlling Nuclear Exports. The objectives of the DOE export control program are: 1) assist regions of concern in effectively controlling exports and establishing responsible supplier policies; 2) implement statutory licensing requirements; 3) strengthen multilateral supplier

initiatives; 4) foster transparency through automated information sharing and analysis; and 5) advance nonproliferation objectives through technology security. Funding requested for this activity in FY 1997 is $16.9 million compared to $14.5 million in FY 1996.

DOE's export control activities include coordinating the technical review of nuclear and nuclear-related dual-use license applications and developing a coherent policy and supporting procedures to protect export controlled information from release that may benefit proliferants. DOE has developed and is enhancing a proliferation information network to provide proliferation analysis and technical information to support the technical evaluation of license applications. DOE participates in the formulation of multilateral and international export control policy by contributing technical expertise to negotiations and negotiators and, in some cases, leading negotiations on export control regimes (e.g., the Zangger Committee). These export control regimes include the Nuclear Nonproliferation Treaty (NPT) Exporters Committee, the Nuclear Suppliers Group, and the Wassenaar Arrangement. DOE has recently finished participating in updating the Nuclear Suppliers Group Dual-Use List, which clarified previously complicated descriptions of machine tools and updated 32 entries on the Dual-Use Annex. DOE is also leading an exercise in the Zangger Committee to clarify nonsensitive fuel-cycle technology on the Trigger List. In addition support is provided to U.S. proliferation prevention policy through the use of the Nuclear Suppliers Group information sharing system, which provides technical information and notification of license application denials by other member states. DOE plays a pivotal role in interagency efforts to strengthen foreign export controls by providing direct consultations, training and technical assistance to the governments of Central Eastern Europe and the FSU who wish to improve their capabilities and performance in the export control arena.

DOE has developed and begun the implementation of its integrated export control plan, *The Department of Energy Plan for Cooperation on Export Controls in the Former Soviet Union*. The main goal of the plan is to assist Russia and the NIS in stemming the illicit flow of nuclear and nuclear-related dual-use commodities, materials, and technologies through the creation or enhancement of a robust control system — one which utilizes, to the fullest extent possible, the respective countries' scientific and industrial base. Efforts in 1996 will continue to: 1) assist in identifying illegal transfers of dual-use technologies through publication (in English and Russian) of a Nuclear Suppliers Group Customs Guidebook on sensitive goods; 2) increase FSU laboratory-to-laboratory arrangements with other institutes and countries including the National Nuclear Center in Kazakstan and the Academy of Sciences (National Scientific Center - Institute for Nuclear Research) in Ukraine; and 3) promote the role of technical experts in export license reviews.

In 1997 DOE will continue to serve as the principal U.S. agency for: 1) the identification of commodities that could be of significance for nuclear weapons purposes; 2) the negotiation of multilateral controls on these items; and 3) the international nuclear export control regimes, in particular the Nuclear Suppliers Group and the Nuclear NPT Exporters Committee.

5.2.8 Strengthening the Nuclear Nonproliferation Regime. In promoting a stronger nuclear nonproliferation regime, DOE: 1) promotes adherence to the NPT worldwide; 2) increases the effectiveness and efficiency of the IAEA; 3) supports the conclusion of the negotiation of a comprehensive nuclear test ban treaty; 4) facilitates IAEA inspections of excess fissile materials;

and 5) promotes regional nonproliferation measures. Requested funding for this activity in FY 1997 is $39.3 million compared to $23.2 million in FY 1996.

Efforts underway in 1996 to provide technical support to negotiations on beginning operations to stabilize spent fuel pool water and store spent fuel at the research reactor in Nyongbyon, North Korea will continue. DOE supported the successful negotiation of the U.S./EURATOM Agreement for Cooperation in nonproliferation matters, as well as agreements for cooperation with FSU, Switzerland, and China. Efforts will continue to support international negotiations, such as the fissile materials cutoff treaty, through site visits and bilateral discussions, the continuing spent fuel stabilization efforts at Nyongbyon, and a series of technical workshops with Chinese scientists on arms control issues. The Cooperative Monitoring Center will be used to further regional arms control and nonproliferation activities including: increased engagement with Middle Eastern states through training, verification experiments, and planning for regional crisis prevention centers; expanded international cooperation in remote monitoring and seismic verification; increased cooperation with arms control organizations in South Korea; and greater engagement with Indian and Pakistani scientists on regional verification. Plans are underway to: 1) initiate IAEA safeguards on excess plutonium at Rocky Flats; 2) develop new IAEA safeguards methods for excess nuclear materials in sensitive forms; 3) assist IAEA implementation of strengthened safeguards measures for routine use of enhanced technology (e.g., environmental sampling, remote monitoring, and enhanced information management); and 4) enter into safeguards agreements with South Africa, China, Sweden, Finland, and Canada.

For 1997, planned activities will include: 1) implementation of a comprehensive nuclear test ban and regional calibration exercises; 2) assistance in implementing a nuclear framework agreement with North Korea, including the completion of the canning of spent fuel at Nyongbyon; and 3) support for other regional arms control approaches to the back end of the nuclear fuel cycle in Asia.

5.2.9 Nuclear Emergency and Terrorism Response. The DOE maintains several emergency response assets postured to respond to events that may occur should proliferation prevention efforts fail. DOE conducts analyses and provides operational and technical support in response to nuclear emergency and terrorism events worldwide. DOE's threat assessment process consists of an evaluation of nuclear threats from technical, operational, and behavioral standpoints. The assessment is integrated into the decision process for deployment of operational assets.

The emergency response asset with primary responsibility for responding to acts of nuclear terrorism is the Nuclear Emergency Search Team (NEST). NEST provides operational and technical support for resolution of incidents or accidents involving nuclear materials and can be deployed anywhere in the world under the authority of the lead federal agency (i.e., the FBI for operations within the U.S. and the Department of State for overseas operations). This national resource of skilled personnel and specialized equipment, which can be called upon as needed, is built on DOE's nuclear weapons design and production expertise. These resources are the most effective national assets to locate, identify, assess, and disable nuclear weapons and devices. These include, for example, improvised nuclear devices with the potential to produce a nuclear yield as well as radiological dispersal devices which could be used to spread radioactive contamination into

the environment. Requested funding for DOE emergency management and response programs in FY 1997 is $35.3 million compared to $37.0 million in FY 1996.

5.3 DOE Chemical and Biological Science and Technology

A significant opportunity exists for improved integration of new ideas and solutions into CW/BW defense and counterproliferation through more extensive utilization of DOE's capabilities and core competencies in the chemical and biological sciences. Currently, both DoD and U.S. Intelligence directly draw upon DOE laboratory capabilities in a broad range of areas through the "Work-for-Others" process. Essentially all activities conducted under this arrangement are focused on critical near-term defense requirements. DOE, however, has maintained long-standing and preeminent R&D programs in the basic chemical sciences, life sciences, and biotechnology in support of traditional DOE missions (such as nuclear weapons production, production cleanup and environmental remediation, and occupational health and safety). The cutting edge science and technology developments being conducted by the DOE laboratories are key to developing longer term, more difficult CW/BW defense and counterproliferation solutions to meet user community needs.

In FY 1996, DoD and, to a lesser extent, other government agencies are sponsoring approximately $30 million in CW/BW detection technology development at the DOE national laboratories. This work is primarily focused on finding near-term solutions to the demilitarization of CW munitions stockpiles and conducting strategic and battlefield intelligence collection. Nonproliferation technology development undertaken by DOE for its nuclear mission, but which at the scientific level is also directly applicable to CW/BW counterproliferation, amounts to approximately $70 million out of the $200 million verification and control technology R&D program. In comparison, over this same fiscal year period, the DOE laboratories will conduct over $320 million in biotechnology research under the auspices and coordination of the DOE Biotechnology Interlaboratory Council. Chemical sciences research activities exceed this amount. Included in this research are such relevant activities as: studies of toxicological effects, development of new and miniaturized chemical and biological sensors, remote measurement and sensing of chemical and biological species, development of biological and chemical remediation techniques, and development of advanced chemical and biological laboratory analytical methods.

5.4 DOE Technologies Developed to IOC

Except for the specific portions of the satellite nuclear detonation detection activities for nuclear test monitoring, DOE-developed technologies are not normally taken to initial operating capability (IOC). Under DOE technology development activities, the end product is a capability demonstration of a system or method, most commonly in the form of a field capable prototype, developed in direct response to requirements identified by a user agency. It is at this stage in the hardware development cycle that DOE program managers encourage and participate in the transfer of the technology 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 LTBT. These sensors are secondary payloads on the GPS and DSP satellites (as described above in Section 5.2.2). DOE is developing the next generation 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. In addition to these satellite systems, DOE is also developing ground based components for airborne radionuclide sampling systems and will be heavily involved in supporting other agencies of the U.S. Government in identifying reliable commercial suppliers.

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6. U.S. Intelligence Programs to Counter Proliferation

6.1 Introduction and Summary

U.S. Intelligence has received clear and concise policy guidance for conducting its intelligence activities. This guidance begins with Presidential Decision Directives that address weapons and related technology proliferation, including, for example, nuclear smuggling. Additional guidance comes from annual Congressional Defense and Intelligence Authorization and Appropriation Acts, reports to Congress by U.S. Agencies on countering proliferation activities, and DoD counterproliferation policy and military missions objectives. These outline a national nonproliferation strategy centered around four key aspects: 1) prevent the acquisition of WMD, 2) roll back existing WMD capabilities, 3) deter WMD use, and 4) adapt military forces and emergency assets to respond to WMD threats.

A focused set of enduring intelligence needs has been developed in response to the policy guidance reflected in the four aspects of our nonproliferation strategy. These enduring intelligence needs are used to chart the progress of U.S. Intelligence in making use of existing capabilities and in defining and developing areas for new investments.

U.S. Intelligence and the Counterproliferation ACEs. Fifteen critical counterproliferation investment areas were identified last year by the CPRC (see Table 1.2). Intelligence activities and programs are an integral part of each of these investment ACEs. The reader is referred to the Intelligence Annex for details of the overall U.S. Intelligence program to counter proliferation.

In addition to the counterproliferation ACEs, U.S. Intelligence is working to provide accurate, comprehensive, timely, and actionable foreign intelligence on a broad policy and enforcement front. This has included:

- Support to policy makers responsible for extending and implementing the Treaty on the Nonproliferation of Nuclear Weapons, wherein the U.S. and other signatories have expressed their nonproliferation commitments;

- Examining the entire Russian nuclear weapons cycle to identify areas where transparency measures would be most effective; and

- Maintaining a surge capability to quickly deploy specialists outside the U.S. to the scene of a terrorist nuclear or radiological threat to provide the U.S. Mission and host government advice and guidance on dealing with the threat. During such an incident, the specialists would coordinate fully with the appropriate U.S. Government agencies, keeping them informed and drawing upon their expertise should follow-up action be required.

Strategic Planning Process. U.S. Intelligence has instituted a corporate strategic planning and evaluation process to support efforts to counter proliferation. This process contributes to the

Intelligence Community's 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. A major benefit of this effort has been the placement of a significant number of DoD personnel within the DCI's Nonproliferation Center (NPC). This has helped integrate intelligence support to DoD counterproliferation needs and actions. U.S. Intelligence also has expanded its relations with the law enforcement community. The U.S. Customs Service, for example, has assigned a senior Customs agent to the NPC to assist in developing joint initiatives to counter proliferation activities. The NPC is also working to enhance information sharing technologies and resources in support of the law enforcement community's nonproliferation efforts.

As the threat of proliferation has increased, U.S. Intelligence capabilities to support nonproliferation efforts have been redirected or expanded and now include:

- Assessing the intentions and plans of proliferating nations;
- Identifying WMD 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 direct support for multilateral initiatives and security regimes; and
- Overcoming denial and deception practices established by proliferators to conceal their programs.

U.S. Intelligence has taken or participated in actions to address the overall challenges facing U.S. nonproliferation efforts, including:

- Identifying funds to maintain technical intelligence collection programs related to WMD tests;
- Fostering the development of new technologies with the potential to improve the ability to detect WMD activities at significantly longer ranges than possible today;
- Establishing a relationship to enhance cooperation between U.S. Intelligence and R&D components;
- Redirecting and reorganizing intelligence activities to increase and sharpen the focus of nonproliferation-related efforts, both analytically and operationally; and

- Redirecting programs to assist the FBI and U.S. Customs Service efforts to identify, target, and apprehend individuals engaged in the trafficking and smuggling of nuclear materials worldwide.

Operational Planning Process. The Defense Intelligence Agency (DIA) is linking counterproliferation intelligence production more directly to the Deliberate Planning Process. DIA is taking guidance from the Joint Strategic Capabilities Plan and direction from the Commands' J-2s (Intelligence), J-3s (Operations), and J-5s (Plans and Policy) to allow U.S. Intelligence to more clearly define and satisfy the intelligence needed to support CINC counterproliferation contingency planning and operations.

Intelligence Successes to Date. U.S. efforts to counter WMD proliferation have enjoyed some successes over the past several years. The DCI noted in his March 20, 1995 statement before the Senate: "I think a tremendous amount of progress has been done . . . to build a serious, post-Cold War, nonproliferation intelligence capability." For obvious reasons, many of U.S. Intelligence's successes cannot be described in this unclassified report. However, some that can be described include:

- Supporting Department of State efforts to provide actionable intelligence to the UNSCOM inspection and monitoring effort in Iraq;

- Supporting U.S. diplomatic discussions with South Africa concerning Pretoria's adherence to the NPT;

- Developing a list of collection indicators to alert collectors and analysts prior to the use of chemical and biological weapons. Similar initiatives are also underway to provide early warning for the possible diversion of nuclear materials;

- Establishing a Southern Tier Study Group designed to focus on all WMD-related proliferation issues in the southern tier of the former Soviet Union; and

- Providing Congressional committees with a report that reviewed and evaluated nonproliferation programs in the NFIP FY 1996 budget submission.

But even if all of the intelligence accomplishments could be listed, we would be the first to say there is more to do. Over the next year, U.S. Intelligence will seek to:

- Strengthen and focus our integrated collection strategy;

- Work to enhance the Community's information processing capabilities;

- Implement unified and standardized information systems, to include shared access by intelligence and consumer organizations;

- Strengthen and broaden foreign language training and support tools;

- Continue to review and evaluate new methodologies and technologies; and,

- As part of the DCI and Secretary of Defense joint program and budget reviews, continue to evaluate intelligence resources and capabilities for optimal support for actions to counter proliferation.

U.S. Intelligence takes seriously the danger of the use of WMD. It has been just over one year now since the poison gas attack in the Tokyo subway. Press reporting in the U.S. focused on the possibility of a similar attack happening here. U.S. Intelligence fully recognizes that after-the-fact efforts are not adequate — we need to stop WMD attacks before they occur. Intelligence is the key. U.S. Intelligence has added resources to its efforts over the last few years as the threat has increased, and it will continue to do all it can to meet the needs of its policy, defense, and enforcement customers and to protect the American public at home and abroad.

6.2 New U.S. Intelligence Initiatives to Counter Proliferation

Details of new U.S. Intelligence initiatives to counter proliferation can be found in the Intelligence Annex to this report.

6.3 Status and Accomplishments of U.S. Intelligence Programs to Counter Proliferation

More detailed descriptions of the status and accomplishments of U.S. Intelligence programs to counter proliferation can be found in the Intelligence Annex to this report.

7. CPRC Findings and Recommendations

7.1 The Integrated Response to Countering Proliferation

Progress in Addressing the Counterproliferation ACEs. Table 7.1 summarizes the integrated programmatic response of DoD, DOE, and U.S. Intelligence in addressing the counterproliferation ACEs. Key programs strongly related to countering proliferation are matched to the ACE priorities they address. As illustrated in Table 7.1, considerable RDT&E and procurement activities are underway in each ACE priority area by multiple DoD Agencies (including through the Chemical and Biological Defense Program (CBDP) and Counterproliferation Support Program (CPSP)), the Services, and DOE.

Table 7.1: Integrated Response to Addressing the Counterproliferation ACEs

Counterproliferation ACE	Key DoD, DOE and U.S. Intelligence* Programs to Counter Proliferation
1. Detection, Identification, and Characterization of BW/CW Agents	• DoD: CBD, CPSP, and Joint Service Programs
2. Cruise Missile Defense	• DoD: DARPA, BMDO, and Service Programs
3. Theater Ballistic Missile Defense	• DoD: BMDO and Service Programs
4. Detection, Characterization, and Defeat of Underground WMD Facilities	• DoD: DNA, CPSP, and Air Force Programs
5. Collection, Analysis, and Dissemination of Actionable Intelligence to the Warfighter	• DoD: DARPA, Joint Service, and CPSP Programs
6. Robust Passive Defense to Enable Continued Operations on the NBC Battlefield	• DoD: CBD, Joint Service, DNA, and CPSP Programs
7. BW Vaccine RDT&E and Production to Ensure Availability	• DoD: CBD Program
8. Target Planning for WMD Targets	• DoD: DNA and CPSP Programs
9. BW/CW Agent Defeat	• DoD: DNA and CPSP Programs
10. Detection and Tracking of WMD and WMD-Related Shipments	• DoD: CPSP and Navy Programs • DOE: Diversion/Smuggling Detection R&D Program
11. Prompt Mobile Target Detection and Defeat	• DoD: DARPA and CPSP Programs
12. Support for Special Operations Forces	• DoD: OSD, Joint Service, and CPSP Programs
13. Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	• DoD: OSD, Joint Service, and CPSP Programs • DOE: Nuclear Emergence/Terrorism Response Program
14. Support Export Control Activities of the U.S. Government	• DoD: OSD and DTSA Programs • DOE: Nuclear Export Controls Program
15. Support Inspection and Monitoring Activities of Verifiable Arms Control Agreements and Regimes	• DoD: OSIA, OSD, CTR, DNA, and Air Force Programs • DOE: Production Detection R&D, Nuclear Test Monitoring, and Strengthening the Nuclear NPT Regime Programs

* U.S. Intelligence programs are discussed in the Intelligence Annex

7.2 Findings and Recommendations

The CPRC finds, as evidenced by the numerous accomplishments cited in this report, that the seriousness of the WMD proliferation threat and the need to enhance capabilities to counter it are recognized throughout the DoD, the Joint Staff (including the Services and the CINCs), the DOE, and U.S. Intelligence. Indeed, "countering proliferation" has now become an established and institutionalized priority within each of the CPRC-represented Departments. These efforts reflect the President's firm commitment to stemming the proliferation of WMD and their means of delivery. Much has been done, but much remains to do. And as the decision makers, policy makers, and warfighters continue to reprioritize their nonproliferation and counterproliferation needs, the CPRC will continue to review counterproliferation-related DoD, DOE, and U.S. Intelligence acquisition programs to ensure that these programs continue to meet their evolving needs. The CPRC's recommendations for 1996 are summarized in Figure 7.1 and discussed below.

Just as last year, the FY 1997 President's budget submitted to Congress in March 1996 addresses priority programs for countering proliferation. *Therefore, the CPRC recommends that the FY 1997 President's budget for each of the CPRC-represented Departments be authorized and appropriated by the Congress.*

Countering proliferation is a challenge that will have to be addressed for the foreseeable future. Although the programs proposed in the FY 1997 budget will continue to produce substantial progress in U.S. capabilities to address WMD proliferation threats, areas of capability shortfall will remain after FY 1997. *Therefore, it is the intention of the CPRC to continue the CPRC program review process beyond its congressionally mandated 1996 term.* The CPRC will continue to review FY 1998 and out-year programs and programmatic options associated with countering proliferation and recommend modifications, deletions, or additions to DoD, DOE, and U.S. Intelligence activities and programs as appropriate.

In light of the CPRC's finding that the need to enhance our national capabilities to counter proliferation has become established and institutionalized within the DoD, DOE, U.S. Intelligence, and the Joint Staff, the CPRC has not identified specific programmatic options this year for FY 1998. The CPRC expects the normal budget development processes of each CPRC-represented Department to be adequate to ensure a robust, integrated program for countering proliferation. *Therefore, the CPRC directs each represented Department to continue to address nonproliferation and counterproliferation needs and requirements as a high priority item in their FY 1998 budget development processes.*

The CPRC recommends a continuation of the close coordination of counterproliferation-related RDT&E and procurement programs and activities among the DoD, DOE, and U.S. Intelligence. To this end, the CPRC directs the ATSD(NCB), through his Deputy for Counterproliferation and his Deputy for Chemical/Biological Matters and consistent with their management oversight role for DoD's Counterproliferation Initiative, to continue their active participation in the review of DoD budget submissions to ensure the DoD budget fulfills the recommendations of the CPRC. Furthermore, the CPRC recommends that DoD's ATSD(NCB) continues to work closely with DOE's Director of the Office of Nonproliferation and National

Security and with U.S. Intelligence's Nonproliferation Center to maintain the interdepartmental coordination in RDT&E, acquisition, and management oversight activities that has characterized their integrated response to meeting ACE priorities to date.

In order to better access and utilize DOE's extensive core competencies and more efficiently leverage the existing technical expertise of the DOE laboratories in the chemical and biological sciences, *the CPRC recommends that DOE, DoD, and U.S. Intelligence establish a joint R&D initiative in CW/BW Defense.* This joint R&D activity will serve to expedite the development and rapid fielding of advanced capabilities for CW/BW defense. Under the auspices of the CPRC, a joint DoD, DOE, and U.S. Intelligence management oversight committee will be established to

Figure 7.1. CPRC Recommendations for 1996

coordinate and identify DoD and U.S. Intelligence technology requirements that might be addressed by the DOE laboratories. Through this oversight committee, DOE's Office of Nonproliferation and National Security will be able to make available the full range of DOE R&D capabilities to the CW/BW defense user community, in particular, DoD's Chemical and Biological Defense Program, DoD's Counterproliferation Support Program, and appropriate organizations within U.S. Intelligence (see Section 5.3). A joint long term R&D plan for CW/BW nonproliferation and defense will be developed for interdepartmental review through the CPRC to implement this recommendation.

Recognizing the global nature of WMD proliferation threats, *the CPRC recommends expanding international cooperative efforts to counter these threats by expanding existing joint activities in R&D, proliferation prevention, and counterterrorism being conducted by DoD, DOE, and U.S. Intelligence.* To expedite and more efficiently and effectively meet the challenges posed by this global problem, the CPRC further encourages and endorses cooperation with our international partners through conferences and joint programs.

In light of the ongoing reviews of CINC requirements and national counterterrorism capabilities, the CPRC will review the counterproliferation ACEs in October 1996 and reprioritize them as required based on the outcome of these reviews. The CPRC will be particularly cognizant of the results of the ongoing counterproliferation mission analyses and operational planning exercise workshops being conducted with each of the geographic CINCs (See Sections 4.1.2 and 4.1.4.). Lastly, in view of the growing recognition of WMD terrorism as a significant national security threat, the CPRC believes that the current ACE priority 13, "Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats", should be elevated in priority in the revised ACE priority list. This reprioritization will ensure that the counterproliferation ACEs continue to reflect the integration of CINC warfighting priorities and the overarching national security objectives they support. This ACE reprioritization will serve to improve the focus of future programmatic and managerial efforts to counter the threat of WMD proliferation.

APPENDICES

A. Congressional Language Establishing the CPRC and Its Reporting Requirements

B. CPRC Study Participants

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

D. Planned FY 1997 Budget Profile for DOE Programs Related to Countering Proliferation

E. Listing of Abbreviations and Acronyms

- **Intelligence Annex** (bound separately)

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APPENDIX A

Congressional Language Establishing the 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, Deputy Secretary of Energy

Dr. Gordon Oehler - Special Assistant to the Director of Central Intelligence for Nonproliferation

RADM Scott A. Fry - Deputy Director for Strategy and Policy, Joint Chiefs of Staff, J-5

- **Other Principal Participants**

Dr. Gordon Adams - Office of Management and Budget

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

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

Col Ellen M. Pawlikowski - Deputy for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Ms. Joan B. Rohlfing - Director, Office of Nonproliferation and National Security, Department of Energy

Dr. Harold P. Smith - Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

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

- **CPRC Working Group Participants**

Lt Col Richard Aiken - Counterproliferation Analysis and Response, Office of the Deputy Assistant Secretary of Defense for Counterproliferation Policy

Mr. Sumner Benson - Defense Technology Security Administration

Mr. Greg Bogut - Office of the U.S. Army Deputy Chief of Staff for Operations and Plans, Strategic Plans and Policy Division

Dr. Salvatore Bosco - Special Assistant for Chemical/Biological Matters, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Mr. Douglas Bruder - Special Assistant for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

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

Mr. Ralph Cacci - Counterproliferation Analysis and Response, Office of the Deputy Assistant Secretary of Defense for Counterproliferation Policy

Dr. Millie Donlon - Program Manager, Biological Weapon Defense, Defense Advanced Research Projects Agency

Mr. Mark Flohr - Counterproliferation Program Office, Defense Nuclear Agency

Col Harrison Freer - Executive Assistant to the Deputy for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

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

Lt Col Michael Glaspy - Counterproliferation Analysis and Response, Office of the Deputy Assistant Secretary of Defense for Counterproliferation Policy

Ms. Peggy Greenwood - Defense Intelligence Agency

Dr. Gregory Henry - Office of Management and Budget

Mr. James Horton - Special Assistant for Chemical/Biological Matters, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Maj Michael Kirk - On-Site Inspection Agency, Interagency Affairs

Maj Tim Moshier - Joint Program Office for Biological Defense

Mr. David Newsom - DCI Nonproliferation Center

Mr. Vayl Oxford - Director, Counterproliferation Program Office, Defense Nuclear Agency

Lt Col Jim Player - Headquarters U. S. Air Force, National Security Negotiations Division

Mr. Michael Potter - DCI Nonproliferation Center

Ms. Judith K. Schroeder - On-Site Inspection Agency, Interagency Affairs

Dr. Ann Vopatek - Principal Assistant for Special Projects, Ballistic Missile Defense Organization

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

CDR Brian Wegner - Deterrence/Counterproliferation JWCA Teamleader, Joint Chiefs of Staff, J-5

Lt Col Mike Williams - Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict

Mr. Edward Wolcoff - Joint Program Office for Biological Defense

Mr. Alan Yuriditsky - Defense Intelligence Agency

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) and the Chemical and Biological Defense Program (Table C.2) are summarized along with other key Service (Tables C.3 - C.5) and DoD Agency programs (Tables C.6 - C.12) strongly related to counterproliferation. The summaries include: program/project title, program description, program accomplishments, key program milestones, relevant counterproliferation ACE(s), program/project executing agencies, FY 1997 budget figures, and Program Element (PE) number.

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Table C.1: Counterproliferation Support Program Projects

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • Specific Emitter Identification System (SEI)	• Deployment and operation of equipment to improve identification and tracking of WMD-related shipments	• Successful deployment, demonstration, and operation of prototype systems on aircraft, ships and on land	• Deploy 9 units by 4Q96 • Deploy 32 units by 4Q97 • Transition to the Navy in FY98 • Begin fleet introduction in FY99	10	Navy	2.651	604160D
• Joint DoD/FBI FSU WMD Smuggling Study	• Assess applicability of DoD technologies, capabilities & training to FBI counter-proliferation activities	• Completed DoD assessment • Developed basic WMD training program and pilot training course	• Submit joint DoD/FBI report to Congress • Conduct foreign country WMD training assessments • Train foreign law enforcement agents	13 14 10	FBI	pending*	605160D
• Nuclear Matters Projects	• Assessments of reliability, safety, surety and sustainability of the nuclear stockpile	• New Counterproliferation Support Program start for FY97	• Continue DoD oversight of DOE stockpile stewardship; advisory support to SECDEF • Prepare annual Nuclear Weapons Deployment Request to President	13	ATSD (NCB)	1.941	605160D
• **Strategic/Tactical Intelligence** • High Frequency Active Auroral Research Program (HAARP)	• Single source transmission of long wavelength radio waves (ULF/ELF/VLF) for detection and imaging of underground structures	• Completed installation and began testing of developmental prototype transmitter • Acquisition of optical and radio frequency diagnostic equipment	• FY96: demonstrate concept viability • FY97: image known underground structures; develop system design and operational concept for global surveillance system • FY00: full-power operational facility; demonstrate global imaging capability	4,5	Air Force	0**	603160D
• **Battlefield Surveillance** • Tactical FLIR Sensor	• Improved BDA of underground facilities	• Provided pre-test predictions and successfully completed DIPOLE PRIDE test series • LANTIRN system evaluated	• Complete initial feature extraction system • Complete breadboard system • Conduct LANTIRN proof of principle demo and pod flight tests • Conduct Counterproliferation ACTD	4,5	DNA Air Force	1.010	603160D
• Tactical UGS System (TUGS)	• Continuous surveillance, target characterization and BDA of WMD targets	• Designed prototype data acquisition system • Collected data to evaluate TUGS	• Complete analysis of TUGS test data • Complete TUGS design • Conduct Counterproliferation ACTD demo	4,5,1	DNA DOE	3.187	603160D
• Weapon Borne Sensor (WBS)	• Improved real-time subsurface BDA	• Completed initial design of line payout and airbag systems for antenna deploy	• Conduct full scale sled tests • Conduct pre-ACTD validation flight test • Conduct Counterproliferation ACTD demo	4	DNA Air Force	0.404	603160D
• Data Fusion and Signatures	• Accurate characterization of underground WMD targets	• Methodology to support BDA • Collection/analysis of signature and post-attack change detection data	• Fusion of TUGS, WBS, and FLIR data • Port fused data into MEA • Evaluate during ACTD	4,8	DNA DARPA	2.071	603160D

Table C.1: Counterproliferation Support Program Projects (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• JSTARS Automatic Target Recognition (ATR)	• Integrate mature ATR algorithm and processor into JSTARS for real-time detection and attack of time critical targets	• ATR successfully flown and demonstrated on JSTARS test assets	• Integrate ATR into JSTARS lab • Participate in flight demo • Test ATR in near-real-time environment against actual targets • Integrate into fielded JSTARS	11	Air Force DOE	1.284	603160D
• Counterforce • Collateral Effects Phenomenology Assessment	• Source term characterization and transport prediction, phenomenology experiments, and assessment tool development	• Fielded HASCAL v 1.0 • Successfully completed EUCOM-sponsored field demo of integrated NBC hazard prediction tools • Accurate prediction of hazard plume atmospheric transport	• Complete ACTD Phase I demo • Complete DIPOLE EAST transport experiment • Complete model validation • Conduct Counterproliferation ACTD	8,4	DNA	7.991	603160D
• Advanced Weapon Systems (AUP, HTSF and ITAG)	• Develop enhanced penetrating munition for underground target defeat with expanded compatibility with delivery platforms and an all-weather capability	• Design and penetration studies for advanced unitary penetrator (AUP) • Conducted sled and flight tests of Hard Target Smart Fuze (HTSF) • ITAG airframe chosen (GBU-15)	• Conduct AUP sled, arena and flight tests • Evaluate HTSF in ACTD Phase I • Development of HTSF Ground Setting Unit • Complete system integration and flight tests • Perform technology demonstration drop tests • Conduct Counterproliferation ACTD demo	4	DNA Air Force DOE	9.096	603160D
• Enhanced Weapon Payloads for WMD Target Defeat	• Development of a high temperature incendiary (HTI) weapon payload	• Validated HTI computer simulation	• Conduct small scale tests of HTI material • Conduct HTI field test	4,9	DNA Air Force	5.051	603160D
• BW/CW Agent Neutralization Weapons	• Development of BW/CW agent defeat mechanisms	• Conducted DIPOLE ORBIT field tests to assess stored agent response and plume development • Selected neutralizing approaches and tested against BW surrogates	• Support USAF agent defeat munitions developments • Weaponize selected agent defeat munitions compatible with existing delivery platforms	9,4	DNA Air Force	2.829	603160D
• WMD Target Response and Vulnerability Assessment	• Experimental and analytical analyses of WMD target response/vulnerability and automated WMD target planning	• Fielded IMEA version 1.0 and MEA version 2.0 to EUCOM • Successfully completed EUCOM sponsored field demonstration of integrated hazard prediction tools	• Issue stand alone UNIX version of MEA • Conduct ACTD Phase I demo • Begin above ground model validation • Complete component vulnerability model validation	8,4, 12 13	DNA	2.830	603160D
• Counter-proliferation ACTD	• Integrated operational testing to support early deployment of new capabilities	• Completed static detonation and live weapon drop on simulated BW storage facility to demonstrate target planning tools and technologies • Delivered initial versions of target planning tools to EUCOM	• Conduct final two operational live weapon drops on Phase I facilities (USAF and USN) • Provide Phase I residual capabilities to user • Execute Phase II demonstrations against simulated CW production facility • Provide residual capabilities to EUCOM user	4,8,9 12 13	DNA EUCOM	10.488	603160D

Table C.1: Counterproliferation Support Program Projects (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Passive Defense • Eye Safe Long Range Biological Standoff Detection System (LR-BSDS P3I)	• Accelerated deployment of full Army complement of 9 airborne eye safe IR lidars for battlefield BW/CW aerosol detection and tracking	• Program restructured to reduce risk and preserve budget and schedule integrity • Completed system design • Initiated prototype build	• Begin Fielding in FY98 • First Unit Equipped FY98 • Complete fielding FY99	1,6	JPO-BD Army	15.181	603884BP
• UV Lidar for BW Identification (SR-BSDS)	• Enhanced RDT&E of UV lidar technology for remote BW identification	• Demonstrated feasibility of miniaturized UV laser for BW detection • Continued collection of UV fluorescence spectral data for BW simulants, interferents and backgrounds • Demonstrated pollen/mold discrimination and bacterial classification	• Build brassboard and investigate application to BW Remote Detection/Early Warning ACTD in FY97 • Conduct ACTD with prototype in FY98-99	1,6	JPO-BD Army	5.260	603884BP
• BW Remote Detection/Early Warning ACTD and Advanced BW Detection Technology Development	• Demonstrate and rapidly field interim capabilities for BW attack early warning using standoff UAV, artillery delivered, and man-portable BW detectors • Enhanced RDT&E for miniaturized BW agent detector technologies (bio-refractometer, FOWG, and NERVE agent nonspecific)	• JPO-BD assumed oversight of ACTD in February 1996 • Initiated Operational Effectiveness Assessment and drafting of ACTD Management Plan • Delivered and tested prototype fluid handling system for FOWG • Integrated NERVE components into man portable unit • Developed miniature air sampler and flight test on research UAV	• Joint field trials and technology downselects in FY97 • Conduct ACTD in FY98-99 • Transition into Joint Biological Remote Early Warning System (JBREWS) EMD in FY00	1,6	JPO-BD DARPA	7.881	603384BP
• CW Agent Surface Acoustic Wave Detector	• Enhanced development and rapid prototyping of CW detector for a variety of applications	• Micro fabricated and conducted system check • Transitioned to advanced technology development.	• Transitions to CBD Program in FY97 (PE 603384BP)	1,6	DARPA	-***	
• JSLIST Individual Protection Gear	• Accelerated deployment (by 2 yrs) of this advanced technology lightweight NBC protection suit	• Completed JSLIST-I DT/OT and hot weather DT evaluation • Initiated cold weather DT • Redefined JSLIST-II Program Plan	• Transitions to CBD Program in FY97 (PE 604173BP)	6,1	DARPA	-***	

Table C.1: Counterproliferation Support Program Projects (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Counter Paramil./ Covert/Terrorist Threats** • Advanced Technology for Countering BW/CW Threats	• Development of technologies and prototypes to assist SOF/EOD in countering BW/CW threats	• Completed prototype perimeter monitoring sensor platform • Fabricated and tested prototype Vented Suppressive Shield (VSS) • Quick Mask user survey completed • Tested enzyme-laced BW agent aerosol mitigation foam • Initiated BW/CW EOD Suit project	• Filed test perimeter monitoring system FY97 • Fabricate larger VSS 3QFY97 • Complete Quick Mask prototype production and user testing 1QFY97 • Test prototype aerosol mitigation concepts 2QFY97	13 12	ASD (SO/LIC) Army	1.717	603160D
• Joint EOD WMD Readiness Sustainment	• Prepositioning of specialized BW/CW EOD equipment and enhanced training for improved readiness	• Completed analysis to define EOD mission parameters • Developed requirements for CONUS response hardware • Coordinated CONUS exercise and readiness sustainment activities	• Complete coordination of OCONUS exercise and readiness sustainment activities • Complete forward deployment of OCONUS response assets	13 12	ASD (SO/LIC)	0.966	605160D
• Swept Frequency Acoustic Interferometer System	• Prototype development for in situ identification of containerized CW agents for SOF use	• Tested against 7 CW agents and 66 precursor chemicals in various container types • Held initial design review with user	• Fieldable prototype deployed 1Q97 • Continue design testing 1Q97 • Improved prototype available FY98	12 13	SOCOM	0.900	603160D
• Specialized SOF Technologies and Prototype Devices	• Development of drill extractor to remove BW/CW samples without breaching containers, BW detector, and other specialized devices for SOF use	• Completed initial prototype design of CW agent extraction tool	• Complete CW agent extraction tool prototype fabrication and testing • Deliver 3 prototype FOWG BW detectors	12 13 1,4	SOCOM	5.766	603160D
• **Program Management, Oversight, and Architecture Studies**	• Analysis, architecture, and technical studies; integrated planning; and management and oversight support for ATSD(NCB)	• Preparation of 1995 CPRC Report • Conducted impact assessment of remote BW detection on casualty mitigation for maneuver forces • Prepared JWCA counterproliferation program database	• Continue program management and oversight support activities, technical analyses, program planning, and integrated architecture studies • Continue preparation of annual reports to Congress	all CPSP projs.	ATSD (NCB) DNA	5.194	605160D
					• **Total:**	**93.698**	

* FY 1997 funding will depend on a review of the joint DoD/FBI report to Congress and the program execution plan currently under development.
** Currently, no FY 1997 funds are budget for this Congressional Special Interest Program.
*** These projects have been transferred to the CBD Program.

Table C.2: Consolidated Chemical and Biological Defense Program

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• New FY97 Starts • Joint Bio Point Detection System (JBPDS)	• Develop a common suite of point BW detectors suitable for integration into all Service platforms	• Conducted joint field trials for initial down select of candidate BW detectors	• Complete Joint Operational Requirements Document and draft RFP 3Q96 • Achieve MS III 1Q00	1,6	JPO-BD Services	7.118	603384BP
• Passive Defense • Non-medical CW/BW Defense	Basic research in chemistry, life sciences, and physics in support of CW/BW defense	• Demonstrated optical detection of micro-encapsulated bioparticles; constructed single bioparticle trap coupled to a fluorometer; and demonstrated matrix assisted laser desorption/time of flight mass spectrometry of bioparticles	• Concept Exploration and Definition	1,6	Army	7.019	601384BP
• Medical CW Defense: Basic Research	• Basic research on medical countermeasures to chemical agents	• Characterized role of potential neuroprotectants in nerve agent-induced seizures and pathology; explored potential biological scavengers for CW agents; developed new models of sulfur mustard injury; and generated hypothesis to define CW mechanisms of action	• Concept Exploration and Definition	6	Army	7.629	601384BP
• Medical BW Defense: Basic Research	• Basic research on the development of drugs and vaccines for BW defense	• Developed expression vector for recombinant plague vaccine; sequenced and expressed filovirus proteins and developed an infectious clone of the western equine encephalitis virus for vaccine preparation; research on the physiological sites of action for bio toxins; and formulated intervention strategies for identified BW agents	• Concept Exploration and Definition	7,6	Army	14.091	601384BP
• CW/BW General Defense	• Exploratory development of antibodies, individual soldier CW detector, BW UV standoff detector technology, and nuclear effects survivability	• Conducted bio simulant field trials of BW agents; evaluated IR standoff BW detector; and cloned first recombinant antibody against botulinum toxin	• Concept Exploration and Definition	1,6	Army	40.996	602384BP
• Medical BW Defense	• Exploratory development of drugs and vaccines for BW defense	• Characterized role of specific genes that code virulence in bacterial agents and anthrax bacillus; evaluated pharmacologic agents for prophylaxis and therapy of bio toxin intoxication; screened drugs and compounds to inhibit toxins (e.g., ricin); tested promising peptides as staphylococcus enterotoxin B vaccine candidates; prepared viral bio-engineered candidate vaccines to Venezuelan equine encephalitis; and formulated strategies for bio-engineered vaccines to other viral threats	• Concept Exploration and Definition	7,6	Army	11.251	602384BP

Table C.2: Consolidated Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Medical CW Defense	• Exploratory development of treatments for CW agent casualties	• Characterized and screened candidate countermeasures against sulfur mustard; characterized and validated countermeasures to nerve agent-induced seizures and pathology; and characterized and validated catalytic approach to nerve agent scavengers	• Concept Exploration and Definition	6	Army	13.026	602384BP
• Medical BW Defense: Vaccines and Drugs Industrial Base	• RDT&E to support BW vaccine and drug development and vaccine production	• Screened candidate vaccines for preliminary safety and efficacy; transitioned ricin vaccine to advanced development; produced hand held assay for BW diagnosis; demonstrated immunizations with anthrax vaccine; conducted advanced pre-clinical prophylaxis studies; and demonstrated protective efficacy of botulinum A vaccine in rodent model • Approval for prime systems contractor vaccine acquisition approach and released RFP on vaccine production for industry comment	• Award prime contract FY97 • Complete vaccine MS IIIs for: tularemia ('96), Q-fever and smallpox ('99), ricin ('00), VEE/botulinum ('01), combined VEE/WEE/EEE/plague ('03), and brucellosis ('04)	7,6	Army JPO-BD	10.247	603384BP
• Medical CW Defense: Life Support Materiel	• Investigation of new medical countermeasures for CW agents	• Evaluated sulfur mustard countermeasures; validated blister agent tests; transitioned cyanide protection drugs to advanced development; developed catalytic nerve agent scavenger models; demonstrated anti-parkinsonian drug protection against nerve agent seizures; and investigated advanced biotech approaches to catalytic nerve agent scavengers	• Advanced Development - Concept Exploration and Definition	6	Army	8.620	603384BP
• CW/BW Defense Systems Advanced Development	• Technology demos in detection/identification, decontamination, and individual/collective protection	• ACPM: conducted engineering design test and qualification test preparations • MICAD: constructed functional systems to permit software prototyping; initiated development of operating software; and prepared draft operations manuals	• Advanced Development - Concept Exploration and Definition	6,1	Army	14.937	603384BP
• NBC Contamination Avoidance	• Demonstration and validation of CW and BW detection technology	• CBMS: completed BW detection algorithms; design modifications to flow controller, computer, BIDS adapter, and mounting system; initiated reliability testing; and fabricated feasibility demo test hardware • NATO: improved detection sensitivity and reliability; initiated advanced prototype development; and developed antibodies for use in BIDS • MS&T: optimized fermentation process for thermostable urease enzyme	• Demonstration and Validation	1,6	Army	7.071	603884BP

Table C.2: Consolidated Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Individual Protection	• Demonstration and validation of chemical and biological detection technology	• ACPM: completed design and construction of developmental masks for preproduction qualification tests; initiated partial purchase of Technical Data Package tooling • M43A1E1: completed acceptance test of 5 candidate lightweight blowers, procurement contract package for pending award of XM48/XM49 blowers, and developmental and operational flight testing of the Aircrew Microclimate Conditioning System	• Demonstration and Validation	6	Army	1.937	603884BP
• Collective Protection	• DEM/VAL of CW/BW collective protection technology	• AICPS: initiated prototype fabrication; completed critical design review; successfully demonstrated prototype filter; and initiated engineering design filter test	• Demonstration and Validation	6	Army	8.946	603884BP
• NBC Decontamination Systems	• Modular Decon System and advanced sorbent technology DEM/VAL	• Held workshop to identify novel decon methods and initiated study for methods to decon BW materials	• Demonstration and Validation	6	Army	8.463	603884BP
• Medical CW Defense Life Support Materiel	• Advanced development of pretreatments and antidotes for CW agents and casualty decontamination	• Completed studies of nerve agent antidote systems; conducted testing of the multi-chambered autoinjector; demonstrated efficacy of topical skin protectants against CW agents; initiated cyanide pretreatment development; evaluated commercial CW protective patient wrap products to improve air circulation	• Demonstration and Validation	6	Army	4.021	603884BP
• Medical BW Defense Materiel	• Advanced development of vaccines and drugs	• Completed smallpox vaccine safety and immunogenicity trials; initiated type F botulinum vaccine trials; and completed MS I IPR for ricin vaccine	• Demonstration and Validation	7	Army	3.632	603884BP
• NBC Contamination Avoidance • Port and Airbase Defense BW Detection ACTD	• EMD of NBC detection and warning systems (BIDS, FOX/NBCRS, ACADA, JBPDS, IBADS, CBMS, MICAD, Pocket Radiac, Airborne Radiac System, LR-BSDS, SR-BSDS) • Demonstrate and rapidly field interim capabilities for protection of airbase and port facilities from BW attack	• NBCRS: initiated production planning for Block I upgrade; completed requirements documentation for MS III; and conducted Operation Manpower and Personnel Integration Demonstration • ACADA: closed out EMD and prepared production contracts; conducted NDI engineering efforts • JBPDS: conducted joint field trials to screen candidate technologies and simulation/modeling efforts to optimize detector employment and design • IBADS: Fielded 10 units for operational testing • CBMS: developed improved hardware requirements and rescheduled chemical profiling tests to coincide with new contract award • MICAD: engineering and test support	• Prototype testing in FY96 • Test port/airfield sensors 4Q96 • Test BIDS P3I elements 4Q96 • Complete production of 15 additional IBADS 1Q97 • Complete JBPDS MS II 1Q97 • Accelerate scaled down ACTD deployment to Korea 1Q97 • Complete background aerosol characterization 3Q97 • BIDS P3I MS IV decision 4Q97 • Add CW defense capability 4Q97	1,6	Services	53.133	604384BP

Table C.2: Consolidated Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• NBC Individual Protection Systems	• EOD Ensemble, AERP and Naval Aircrew CW/ BW NDI Respiratory Sys.	• Projects funded under USN PE 603514N/W059 and USAF PE 604601F/3337	• Engineering and Manufacturing Development	6	Navy/ Air Force	3.544	604384BP
• Medical CW Defense Life Support Materiel	• EMD of aerosolized nerve agent antidote and topical skin protectant	• Completed extended stability testing of aerosolized nerve agent antidote and determined comparative safety and pharmacokinetics of pyridostigmine.	• Engineering and Manufacturing Development	6	Army	0.217	604384BP
• Medical BW Defense	• Vaccine Engineering Development	• Completed consistency lot testing of tularemia vaccine in support of Product License Application and completed MS II IPR for Q-fever vaccine	• Engineering and Manufacturing Development	7,6	Army	3.833	604384BP
• Nonmedical BW Defense	• BIDS P3I, JBPDS, IBAD, and Bio Detection ACTD	• NDI BIDS and prototype IBAD fielded	• BIDS P3I initial operational testing and evaluation • Initiate JBPDS EMD • Complete ACTD testing	1,6	JPO-BD Army Navy	29.188	604384BP
• Joint CW/BW Contact Point	• Repository of CW/BW info for multiple users	• This project funded in Army PE 0605710A/DO49	• Management and Support	6	JPO-BD	1.605	605384BP
• Dugway Proving Ground	• Operation of test facilities	• Maintaining test facility readiness	• Continue operations	6	Army	11.625	605384BP
• ***Procurement***							
• M40 Mask	• Procurement of M40 protective mask	• Continued procurement	• Production and Deployment	6	Army	6.002	208384BP
• PATS	• Protection Assessment Test System procurement	• Continued procurement	• Production and Deployment	6	Army	7.819	208384BP
• ICAM	• Improved Chemical Agent Monitor	• Continued procurement	• Production and Deployment	1,6	Army	3.112	208384BP
• FOX NBCRS	• FOX NBC Recon. System	• Continued procurement	• Production and Deployment	1,6	Army	56.735	208384BP
• Pocket Radiac	• Compact radiation measuring device	• Continued procurement	• Production and Deployment	1,6	Army	3.475	208384BP
• Chem/Bio Protective Shelters	• CBPS collective protection shelter	• Continued procurement	• Production and Deployment	6	Army	12.269	208384BP
• ACADA	• Automatic detection of all known CW agents	• Continued procurement	• Production and Deployment	6	Army Air Force	9.817	208384BP
• Navy CW Detectors	• Shipboard CW detectors	• SALAD: DT/OT to commence in FY96 • IPDS: MS III achieved in FY95	• SALAD procurement scheduled for FY97	1,6	Navy	7.141	208384BP
• Chem/Bio Respiratory System	• Provide USN/USMC fixed and rotary wing aircraft CW/BW respiratory protection	• Continued procurement	• Production and Deployment	6	Navy	7.299	208384BP

Table C.2: Consolidated Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• XM45 Air Crew Protective Mask	• CB protective equipment for aircrews compatible with night vision goggles that radically improves flight safety	• Initiated procurement	• Production and Deployment	6	Army	7.406	208384BP
• BIDS P3I	• Pre-Planned Product Improvement of NDI BIDS	• Test and evaluation plan approved • Awarded P3I BIDS DEM/VAL contracts	• Begin component tests 3Q96 • Procure long lead items 4Q96 • MS IV decision 4Q97	1,6	Army JPO-BD	41.293	208384BP
• Medical BW Defense: Vaccine Procurement	• Procurement of vaccines and medical products	• Anthrax vaccine production underway	• Anthrax vaccine MS III	7,6	JPO-BD Army	19.326	208384BP
• Protective Clothing	• Enhanced CW protection, reduced heat stress, and improved human factors design	• New procurement	• Production and Deployment	6	Joint Service	19.677	208384BP
• M42A2 Mask	• Provides improved fit and greater protection for faster, more efficient decon operations	• Continued procurement	• Production and Deployment	6	Army	4.508	208384BP
• System Fielding Support	• Individual and collective protection equipment	• Continued procurement	• Production and Deployment	6	Services	2.347	208384BP
				• Total:		480.375	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• <u>Passive Defense</u> • All Army Passive Defense Programs have been incorporated into the CBD Program (see Table C.2)							

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • SEI System Support	• Provides operations, management and procurement support to deploy, operate, and upgrade prototype systems to track WMD shipments	• Joint effort with Counterproliferation Support Program (see Table C.1) • New start for FY97	• Performance upgrade • Transition program to Navy in FY98 • Begin Fleet intro. FY99	10	Navy	1.500	204575N
• **Passive Defense** • Radiological Controls	• RDT&E of various radiation detection and monitoring equipment for Navy Nuclear Power, Medical Safety, Weapons Safety, Radiography, EOD, and Marine Corps	• Multifunction Radiac in production • EOD Dosimeter testing bid samples for production • Laser dosimetry completing EMD • Underwater Radiac entering EMD	• Radiac IOC Jan 1997 • EOD dosimeter IOC 1Q97 • Initiate LRIP for laser dosimeter 4Q96 • Initiate underwater Radiac production FY98	6	Navy	2.886	603542N
• **Countering Paramil./Covert/ Terrorist Threats** • Joint Service EOD Systems	• Specialized EOD equipment to detect, locate, and render safe explosive devices and munitions, including NBC munitions	• Transitioned portable x-ray system to advanced development • Concept demo of specialized weapon disruption devices	• Continued development of sensor defeat, high velocity shaped charge, and under-water retrofit technologies	12,13	Navy	3.870	603654N
• Joint Service EOD Procedures	• Test and validate prototype EOD systems and develop specialized procedures for EOD units • Funds DTRG technical support unit	• Development, validation, approval, and distribution of 49 new bulletins to fielded EOD units	• Continued testing of prototype equipment and distribution of procedures bulletins in support of EOD operations • Continued support of DTRG	12,13	Navy	5.846	604654N
				• **Total:**		**14.102**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • Treaty Verification Support	• Support of ongoing arms control treaty implementation and compliance verification • Seismic and nonseismic monitoring technology to verify nuclear test bans, including the CTBT	• Completing development/transfer of International Data Center for CTBT • Development/integration of global seismic continuous threshold monitoring network • Expanded prototype testing of CTBT data fusion knowledge base • Modified Open Skies aircraft	• Develop/procure seismic, radionuclide, hydroacoustic and infrasonic sensors • Develop industry-based programs to accelerate development of nuclear detection systems and sensor data analysis capabilities	15	Air Force ATSD (NCB)	26.786	305145F
• Nuclear Detonation Detection System	• Procurement of nuclear detonation detectors for integration on GPS satellites	• Integrated new sensors on GPS Blk 2R satellites, built and tested ground segment software and display system, and finished software incorporating advanced sensor data.	• Software to provide full functionality for GPS Blk 2R and Blk 2F • Support Blk 2F with check-outs and modifications	15	Air Force	13.623	305913F
• **Strategic/Tactical Intelligence** • HAARP Project Support	• Scientific research, exploratory development and operational support	• Program supplemented by Counter-proliferation Support Program (See Table C.1)	• See Table C.1	4,5	Air Force	0*	601102F 602601F
• Laser Airborne Remote Sensing	• Develop long range airborne lidar for remote sensing of CW/BW agent production signatures	• Demonstrated 21 km range • Proof-of-principle demonstration for heterodyne and direct detection	• Flight tests to validate 50 km range (4Q96) • Demo 80 km range in FY98	5,1	Air Force DIA	3.000**	602601F
• **Counterforce** • Hard and/or Deeply Buried Target Defeat Capability	• End-to-end evaluation and development of hard and/or deeply buried target defeat capabilities	• USD(A&T) approval of Concept Exploration and Definition • Issued a Request for Information and hosted an Industry Day	• Formal receipt of industry concept proposals (3Q96) • Initiate Analysis of Alternatives • Achieve MS I approval	4,5,8 12	Services DNA DIA OSD	5.000	Joint Service PE pending
• Agent Defeat Weapons Study	• Develop capabilities and munitions concepts to defeat BW/CW agents	• Phase 0 acquisition program • Concept evaluations underway	• Complete concept evaluations	9	Air Force	0.100	pending
• **Active Defense** • Theater Missile Defense	• Procurement of C4I enhancements, improvements to existing attack operation systems, and cost-effectiveness assessments for the ABL	• Completed software upgrade and prototyping of Expert Missile Tracker; TMD-related country study on Syria; TMD message set for JTIDS for AWACS	• Complete TMD-related country studies; refine and automate IPB methodology; and create operations decision support tools to identify time critical targets	3,5	Air Force	22.285	208060F

Table C.5: Key U.S. Air Force Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Airborne Laser (ABL) Technology	• Demonstration of laser beam control technologies and effectiveness of lasers against TBMs	• Demonstrated enhanced laser power and completed high altitude optical atmospheric turbulence measurements	• Milestones keyed to progress on ABL demonstrator	3,2	Air Force	5.000**	603605F
• AirBorne Laser DEM/VAL	• Airborne platform integration and demo of boost phase defense against TBMs; study of adjunct air and cruise missile defense missions	• Concept design process nearing completion; on track for DEM/VAL contract award in Jan 97	• Demo full scale laser mods and acquisition and tracking system; conduct ground and flight tests • Demo target missile shootdown	3,2	Air Force	56.800	603319F
• Space Sensor and Satellite Communication Technology	• Sensor and communications technologies required to support TMD	• Completed design and fabrication of large format focal plane array for mid-wave IR applications	• Demo LWIR and develop 2-color large staring focal plane arrays; integrate rapid acquisition modem into advanced MILSATCOM • Prototype JTIDS range extension	3,2	Air Force	2.547**	603401F
					• **Total:**	**135.141**	

* Currently, no FY 1997 funds are budgeted for this Congressional Special Interest Program.
** Generic technology development that applies to counterproliferation and other mission areas.

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Active Defense • Support Technology, Exploratory and Advanced Development	• Innovative Science and Technology, Small Business Innovative Research and Technology Transfer Programs • Technology applications and Historically Black Colleges and Universities/Minority Institutions Program	• Flight qualification of 23 sensor and detector technologies for space applications • Designed, programmed and installed national data base on BMDO programs	• Continue investment in key technologies • Award Phases I & II SBIRs • Continue program as mandated by law	3,2	BMDO	94.023 132.319	602173C 603173C
• THAAD System	• Conduct flight testing and DEM/VAL program development	• Completed infrastructure development • Completed 5 flight tests	• Complete MS II review • Complete flight testing for DEM/VAL and EMD	3	BMDO	269.000 212.798	603861C 604861C
• Navy Theater-Wide System	• Continues Navy theater-wide planning, studies, and engineering	• Completed flight demonstrations, analysis and close-out of LEAP flight tests; advanced AEGIS operational capability demonstration in process	• Transition control of LEAP technology program to Navy for theater-wide development • Conduct pre-EMD flight test	3	BMDO	58.171	603868C
• MEADS	• Supports international teaming and project definition-validation of short range TBM and advanced air defense systems	• Completed Statement of Intent with Germany and Italy to develop and produce MEADS	• Issue Project Definition-Validation phase contracts • Establish National Product Office for management and conduct of assigned tasks	3,2	BMDO	56.232	603869C
• Boost Phase Intercept	• Development of kinetic kill vehicle for follow-on demonstration	• Validated KKV flight performance and measured flight environments • Initiated fabrication of flight configured seekers • Continued development of Air Force and Navy CONOPS architectures	• BMDO funding terminated in FY96	3	BMDO	0	N/A
• National Missile Defense (NMD)	• System development, test and deployment planning for NMD	• Shifted from technology readiness to 3 year deployment readiness program to shorten IOC time to 3 years • Selected as Acquisition Category 1D Acquisition Program • Completed NMD-Radar Technology Demonstration design review and the Flyingsdale EWR experiment	• Conduct ground and flight tests to evaluate system • Continue to develop, modify, and update contingency deployment plans • Execute FYDP NMD MILCON and facility design and construction projects • Prepare acquisition justification in FY00 for deployment	3	BMDO	508.437	603871C

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• Joint TMD DEM/VAL	• Joint data collection, validation, and analysis for TMD technologies, components, systems, and programs • Joint BMC3 integration, network testing, and development	• Designed, developed, and maintained tools for measuring performance of BMDO core systems, advanced sensors, risk reduction, readiness, threat, countermeasures, and advanced BMC3 initiatives/architecture • Completed DoD and NATO approval of the TADIL-J interface change • Integrated prototype capabilities into Air Force, Army, and Navy systems • Obtained NATO approval on TMD message standards	• Provide data collection and evaluation support for BMDO core systems and those selected in FY98 as part of the Advanced Capability Concept Program • Integrate JTIDS into Army and Air Force systems • Create joint Navy/USMC BMC4I acquisition strategy • Deploy joint TMD planning capability to command centers for beta testing	3,2	BMDO	520.111	603872C
• Patriot PAC-3	• Continue missile EMD, remote launch, communications development, and testing • Initial procurement	• Began PAC-3 system procurement and fabrication • Developed test plans and procedures for DT/OT flight tests	• Begin formal flight testing of PAC-3 missile • Complete fielding of configurations 1 & 2 FUE	3	BMDO	381.509 215.378	604865C 208865C
• Navy Area Defense System	• Modify Navy Standard Missile and AEGIS combat system (ACS) to enable endoatmospheric TBM engagement • Initial component procurement	• Completed initial design of ACS software modifications • Conducted initial lethality testing and analysis	• Conduct M II DAB review • Conduct EMD flight tests	3	BMDO	60.000 241.582 9.160	603867C 604867C 208867C
• Hawk Procurement	• Upgrade USMC Hawk to provide a TBM defense capability	• Completed developmental flight testing • Verified aircraft and TMD tracking performance	• Conduct operational testing	3	BMDO	19.379	208863C
• TMD BMC3 Procurement	• Provide JTIDS terminals	• Ensured single configuration for all terminals	• Provide TMD interoperability for multiple platforms	3,2	BMDO	19.256	208864C
				• Totals:		2,797.355	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Counterforce & Battlefield Surveillance** • Sensor and Exploitation Systems	• Develop sensors to defeat camouflage, concealment, and deception practices and provide near real-time, semi-automatic exploitation of wide area imagery to track critical mobile targets	• Collected test data with ultra-wide-band synthetic aperture radars to support engineering design of a foliage penetration (FOPEN) radar • Demonstrated a new suite of target recognition algorithms that achieved high detection probabilities and low false alarm rates	• Demonstration of real-time processor for FOPEN radar • Design and integration of the FOPEN radar on UAV • Demonstration of automatic target cueing, classification of vehicle, and false alarm mitigation techniques	11,5	DARPA	69.201	603226E
• Information Integration Systems	• Development of an integrated, all-source, geographically referenced battlefield knowledge base and information distribution system for enhanced, real-time situation assessment	• Completed integration of a single intelligence source correlator • Demonstrated functionality of the global broadcast service and information servers for rapid disseminated of imagery products	• Demonstrate and integrate multi-intelligence correlators for signals, text, and imagery • Demonstrate functional warfighter's associate that combines direct broadcast and flexible access to large data and product servers	11,5	DARPA	67.914	603226E
• **Active Defense** • Air Defense Initiative	• Development of Mountain Top radar for defense against manned aircraft, cruise missiles, and theater ballistic missiles	• Integrated illumination and surveillance radars for the Mountain Top cruise missile defense demonstration • Provided radar hardware for demonstration of cruise missile intercept	• Adapt space-time processing techniques to USN/USAF AEW radars • Demonstrate rejection of hot clutter from moving platforms • Detect cruise missiles in jamming	2,3	DARPA	21.777	603226E
• **Passive Defense** • Initiative in BW Defense	• Basic research to develop and demonstrate technologies that will minimize impact of BW on military operations	• Developed miniaturized BW detector and integrated into UAV for testing • Demonstrated operational capability of living, biological, neuron-based, agent nonspecific toxin sensor	• Continue R&D under joint DARPA ATSD(NCB) MoU	1,6	DARPA	20.000	601101E
				• **Totals:**		**178.892**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • CWC Verification Technology	• RDT&E of technologies for verification of the Chemical Weapons Convention (CWC), including inspection support	• Developed instrumentation for characterizing contents of CW containers without direct sampling • Developed provisional modular laboratory for on-site analysis • Developed inspector training courses	• Develop handheld detector for CWC inspectors • Develop ruggedized, self supporting on-site laboratory • Adapt emerging analytical and sensor technologies for treaty verification	15	DNA	7.228	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	• Achieved START Central Data System IOC • Developed fieldable prototype Arms Control Verification Gravity Gradiometer	• Incorporate START II data reporting requirements into START Central Data System • Implement Treaty Limited Item study results • Develop advanced remote sensing systems	15	DNA	8.605	603711H
• **Counterforce** • Hard Target Defeat	• End-to-end evaluation of tactics and technologies to defeat hard targets and mitigate collateral effects	• Supporting OSD/DAB HDBTDC acquisition program • Supporting improvements in hard and deeply buried target defeat	• Adapt MEA tool for tunnels • Release MEA for tunnels ver 2.0	4,8	DNA	4.135	602715H
• Weapons Systems Lethality	• Assessments of weapon lethality and collateral effects; core competency in nuclear weapons effects	• Developed/validated models for combined weapons effects	• Demonstrate advanced predictive tools and integrate into warfighter systems	8,4	DNA	15.000	602715H
• **Passive Defense** • Test and Simulation Technology	• Simulators and simulator technology required to validate weapons systems operability in a nuclear environment	• Supported multiple Service test program requirements	• Continue to support reoccurring system radiation test requirements	6	DNA	23.502	602715H
• Weapon Safety and Operational Support	• Force survivability assessments against nuclear weapons and counter-proliferation training support	• Initiated survivability integration program • Completed PACOM/CENTCOM counterproliferation assessments • Completed TMD Requirements Study • Completed Strategic Futures III study	• Demonstrate prototype system for survivability simulation planning • Initiate Intelligent Target Interface for NATO • Support ASD(ISP) Interregional Deployment • Complete Strategic Futures IV • TMD assessments for EUCOM, SHAPE/NATO and BMDO	8,6,2, 3,11	DNA	2.085	602715H
				• **Totals:**		**60.555**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • Critical Technology Support	• Supports development and publication of the Militarily Critical Technologies List (MCTL) • Identifies and assesses technologies and products which could assist in countering the proliferation of WMD.	• Ensured key WMD, delivery system and dual-use technologies are included on MCTL • Provided technical support to DoD and interagency processes in Wassenaar Arrangement and other WMD constraint arrangements	• Monitor and update MCTL regularly to ensure it includes new and emerging technologies that could assist in WMD proliferation	14	OSD	2.743	605110D
• **Countering Paramil./Covert/ Terrorist Threats** • Counterterror Technical Support	• Development of technical capabilities and prototype systems and concepts to detect, render safe and defend against paramilitary, covert delivery, and terrorist NBC threats	• Completed development of: timer detector, explosive detection training/ testing materials, hand held remote CW detector, and BW/CW aerosol scavenging foam	• Complete development of prototype 3D x-ray machine, large volume explosive detection system, and a stand-off bomb detection system	13,12	ASD (SO/LIC)	16.521	603122D
• Joint Robotics Program	• Consolidates Service/DoD RDT&E efforts to DEM/VAL mature robotics technologies for EOD and other activities	• Completed critical design review and DT of Remote Ordnance Neutralization System (RONS) • Conducted ATD for Unmanned Ground Vehicle (UGV) technology	• Transition RONS to EMD • Continue demonstration of UGVs for recon, surveillance, and target acquisition missions	12,13	PDUSD (A&T/S&TS)	23.744	603709D
• Physical Security Equipment	• Consolidates DoD nuclear and other high value weapon protection activities	• Performance tested and installed commercially available security systems at military bases and aboard ships	• Continue installation of systems at military facilities • Continue RDT&E activities	12,13	PDUSD (A&T/S&TS) Army	18.676	603228D
				• **Totals:**		**61.684**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • Destruction and Dismantlement	• Assistance to FSU in the destruction and dismantlement of nuclear weapons, strategic delivery systems, and chemical munitions.	• All nuclear warheads removed from Kazakstan and returned to Russia • Secure withdrawal of 63 of 81 SS-25 mobile ICBMs and launchers from Belarus to Russia • Early deactivation of all SS-24 and half of the SS-19 ICBMs in Ukraine • Evaluated Russian 2-step CW destruction process	• Eliminate all SS-19 missiles and silos in Ukraine by Nov. 1998, 3 years ahead of START deadline • Complete Shchuch'ye CW destruction implementation plan (4Q96)	15	ATSD (NCB)	177.500	FSU Threat Reduction
• 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	• Completed delivery of armored blankets • Phase I development of automated inventory control and management system completed in 2Q96	• Complete 35% of Mayak fissile material storage facility design (4Q96) • Complete installation of railcar enhancements (4Q96) • Complete delivery of super-containers (2Q97)	15	ATSD (NCB)	119.500	FSU Threat Reduction
• Demilitarization	• Support for conversion of defense related industry and demilitarization of the nuclear weapons industry through elimination of physical infrastructure	• Established 17 joint business initiatives between U.S. companies and NIS defense enterprises formerly associated with WMD production • Over 11,500 former Soviet weapons scientists and engineers once working on WMD projects now employed in peaceful civilian research • Defense Enterprise Fund established in 1994	• Continue to monitor current contracts and bring them to a successful conclusion (program ends in FY96)	15	ATSD (NCB)	0	FSU Threat Reduction
• Other Program Support	• Training and exchange projects in the FSU to increase expertise in demilitarization; administrative and logistical support to other CTR areas	• Established defense and military-to-military focus on professional exchanges • 12 audits and examinations of CTR assistance conducted in 1995	• 200 defense and military-to-military contacts planned • 18 additional audits and examinations scheduled through Dec. 1996	15	ATSD (NCB)	30.900	FSU Threat Reduction
				• **Totals:**		**327.900**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **New Start:** • Comprehensive Test Ban Treaty (CTBT)	• Proposed escort, security, and training functions for DoD/U.S. personnel and facilities	• Technical advisory support to the CTBT Interagency Backstopping Group and the U.S. Delegation to the Conference on Disarmament	• Program still being defined	15	OSIA	0.100	O&M
• **Proliferation Prevention** • INF Treaty	• Inspections and inspection support under the terms of the Intermediate-Range Nuclear Forces treaty	• Treaty year 8 inspections ongoing	• Continuation of treaty-related inspections	15	OSIA	13.000	O&M
• START I Treaty	• Inspections and inspection support under the terms of START I	• Baseline and treaty year 1 inspections completed successfully	• Continuation of second treaty year inspections	15	OSIA	19.000	O&M
• START II Treaty	• Planning and preparations for verification of START II	• Senate gave advice and consent to ratify treaty in January 1996	• Awaiting ratification of the treaty by the Russian Duma	15	OSIA	5.900	O&M
• Nuclear Testing Treaties	• Monitoring and monitoring support of Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty	• Maintained capability to deploy and monitor a Russian nuclear test should one be declared	• Continued maintenance of capability to monitor Russian nuclear test	15	OSIA	3.700	O&M
• Chemical Weapons Agreements	• Inspections and inspection support under the terms of CWC and Bilateral Destruction Agreement for verification and destruction of CW	• Wyoming MoU inspection/escort missions completed December 1994	• CWC Entry-into-Force (June 1996) • Bilateral Destruction Agreement: Entry-into-Force (June 1996)	15	OSIA	50.900	O&M Procurement
• Open Skies Treaty	• Facilitate compliance monitoring with existing and future arms control agreements and strengthen the capacity for conflict prevention by promoting openness and transparency	• FY95: conducted trial flight with Germany, hosted U.S. mock inspection and participated in a mock certification with Ukraine • FY96: conducted technical talks with Ukraine and Russia	• Joint trial flight with Canada, hosting a U.S. mock certification 4Q96, and support to the plenary in Vienna • Entry-into-Force expected June 1996	15	OSIA	5.100	O&M
• Safeguards, Transparency, and Irreversibility (STI) Program	• Mutual Reciprocal Inspections (MRI) and escort support associated with anticipated STI agreements	• Escorted Russian inspectors to LLNL and Rocky Flats to review MRI measurements and supported U.S. visit to Mayak for Russian nuclear facility MRI	• Escort Russian team visit to Rocky Flats in late 1996 • Support DoD/DOE in STI talks with Russia	15	OSIA	2.700	O&M
• Other Programs: UNSCOM Operations in Iraq	As executive agent for DoD, provides personnel, services and equipment in support of UNSCOM	• Provided support in enforcing UN Security Council Resolution 687 directing the destruction of Iraq's WMD infrastructure	• Continued support to UNSCOM monitoring of Iraq's compliance with UN resolutions.	15	OSIA	1.600	O&M
				• **Totals:**		**102.0**	

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

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	CP ACE	Agency	FY97 Budget [$M]	PE No.
• **Proliferation Prevention** • DTSA Operations and Maintenance	• Operational activities in support of DTSA's export control mission	• Revised U.S. Export Administration Regulations • Established new multinational Wassenaar Arrangement export control system • Reviewed over 10,000 export license applications in 1995 for arms and dual-use technologies	• Monitor and update regulations and lists • Improve Wassenaar Arrangement • Continue license reviews	14	DTSA	10.504	O&M
				• **Totals:**		**10.504**	

APPENDIX D

Planned FY 1997 Budget Profile for DOE Programs Related to Countering Proliferation

The planned FY 1997 funding profiles for DOE nonproliferation programs related to countering proliferation and addressing several counterproliferation ACEs are provided in Table D.1 below.

Table D.1

Planned FY 1997 Budget Profile for DOE Programs Related to Countering Proliferation

DOE Activity Area	CP ACE	FY 1997 Budget [$M]
• Production Detection	15/5	87.0
• Nuclear Test Monitoring	15	72.0
• Diversion/Smuggling Detection	10/5	31.0
• Securing Nuclear Materials, Technology, and Expertise	-*	109.4
• Worldwide Fissile Material Limits	-*	16.6
• Global Stockpile Reductions	-*	4.0
• Nuclear Export Controls	14	16.9
• Strengthening the Nuclear NPT Regime	15	39.3
• Nuclear Emergency/Terrorism Response	13	35.3
	• Total:	**$411.5**

* DOE nonproliferation activity

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APPENDIX E

Listing of Abbreviations and Acronyms

AARS	Advanced Airborne Radiac System
ABL	Airborne Laser
ACADA	Automatic Chemical Agent Alarm
ACDA	U.S. Arms Control and Disarmament Agency
ACE(s)	Areas for Capability Enhancements
ACPG	Aircrew Protective Garment
ACPM	Aircrew Protective Mask
ACS	AEGIS Combat System
ACTD	Advanced Concept Technology Demonstration
AEGIS	Navy shipboard air defense system
AERP	Aircrew Eye/Respiratory Protection
AEW	Airborne Early Warning
AICPS	Advanced Integrated Collective Protection System
AOR	Area of Responsibility
ASD(ISP)	Assistant Secretary of Defense (International Security Policy)
ASD(SO/LIC)	Assistant Secretary of Defense (Special Operations/Low Intensity Conflict)
ATD	Advanced Technology Demonstration
ATR	Automatic Target Recognition
ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
AUP	Advanced Unitary Penetrator
AWACS	Airborne Warning and Control System
BDA	Battle (or Bomb) Damage Assessment
BIDS	Biological Integrated Detection System
bio	biological
Blk	Block (as in Block upgrade for a procurement item)
BM	Battle Management
BMDO	Ballistic Missile Defense Organization
BPI	Boost Phase Intercept
BW	Biological Warfare or Biological Weapons
CALIOPE	Chemical Analysis by Laser Interrogation of Proliferation Effluents
CBD	Chemical and Biological Defense (Program)
CBDP	Chemical and Biological Defense Program
CBIRF	Chemical/Biological Incident Response Force
CBMS	Chemical/Biological Mass Spectrometer
CBPS	Chemical/Biological Protective Shelter
chem	chemical

CINC	Commander-in-Chief
CINCSOC	CINC Special Operations Command
CJCS	Chairman of the Joint Chiefs of Staff
COCO	Contractor Owned, Contractor Operated
COEA	Cost and Operational Effectiveness Analysis
CONOPS	Concept of Operations
CONPLAN	Concept Plan
CONUS	Continental United States
CP	Counterproliferation
CPRC	Counterproliferation Program Review Committee
CPSP	Counterproliferation Support Program
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction
CTTS	Counterterror Technical Support
CW	Chemical Warfare or Chemical Weapons
CWC	Chemical Weapons Convention
C2	Command and Control
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers, and Intelligence
DARPA	Defense Advanced Research Projects Agency
DATSD(NCB)(CP)	Deputy for Counterproliferation to the ATSD(NCB)
DATSD(NCP)(NTPO)	Deputy for Nuclear Treaty Programs to the ATSD(NCB)
DCI	Director of Central Intelligence
decon	decontamination
demo	demonstration
DEM/VAL	Demonstration and Validation
DIA	Defense Intelligence Agency
DNA	Defense Nuclear Agency
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOS	Department of State
DSB	Defense Science Board
DT	Development Test
DTRG	Defense Technical Response Group
DTSA	Defense Technology Security Administration
EEE	Eastern Equine Encephalitis
ELF	Extremely Low Frequency
EMD	Engineering and Manufacturing Development
EOD	Explosive Ordnance Disposal
EUCOM	U.S. European Command
EURATOM	European Atomic Energy Agency

EWR	Early Warning Radar
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FLIR	Forward Looking Infrared
FOPEN	Foliage Penetration
FOWG	Fiber Optic Wave Guide
FOX	designator for the XM93 NBCRS armored vehicle
FSU	Former Soviet Union
FUE	First Unit Equipped
FY	Fiscal Year
FYDP	Future Years Defense Program
GAN	Russian Federal Nuclear Radiation and Safety Authority
GBU	Guided Bomb Unit
GPS	Global Positioning System
HAARP	High Altitude Auroral Research Project
HASCAL	hazard prediction code
HDBTDC	Hard and/or Deeply Buried Target Defeat Capability
HMMWV	High Mobility Multipurpose Wheeled Vehicle (i.e., "Hum Vee")
HTI	High Temperature Incendiary
HTSF	Hard Target Smart Fuze
IAEA	International Atomic Energy Agency
IBAD	Interim Biological Agent Detector
ICAM	Improved Chemical Agent Monitor
ICBM	Intercontinental Ballistic Missile
IMEA	Integrated Munitions Effectiveness Analysis
INTELL	U.S. Intelligence
INF	Intermediate Nuclear Forces (Treaty)
IOC	Initial Operating Capability
IPB	Intelligence Preparation of the Battlefield
IPDS	Improved Chemical Agent Point Detector System
IPP	Industrial Partnering Program
IPR	In-Process Review
IPT	Integrated Product Team
IR	Infrared
ITAG	Inertial Terrain Aided Guidance
JBPDS	Joint Biological Point Detection System
JBREWS	Joint Biological Remote and Early Warning System
JCS	Joint Chiefs of Staff
JMIP	Joint Military Intelligence Program
JPO-BD	Joint Program Office for Biological Defense

JROC	Joint Requirements Oversight Council
JSLIST	Joint Services Lightweight Suit Technology
JSTARS	Joint Surveillance Target Attack Radar System
JTIDS	Joint Tactical Information Distribution System
JWCA	Joint Warfighting Capabilities Assessment
JWCO	Joint Warfighting Capability Objectives
JWSTP	Joint Warfighting Science and Technology Plan
KKV	Kinetic Kill Vehicle
LANTIRN	Low Altitude Navigation and Targeting Infrared for Night
lb	pound
LEAP	Lightweight Exoatmospheric Projectile
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
LWIR	Long Wavelength Infrared
MCTL	Militarily Critical Technologies List
MDS	Modular Decontamination System
MEA	Munitions Effectiveness Analysis
MEADS	Medium Extended Air Defense System
MICAD	Multipurpose Integrated Chemical Agent Detector
MILCON	Military Construction
MILSATCOM	Military Satellite Communications (System)
MINATOM	Ministry of Atomic Energy (Russia)
mods	modifications
MoU	Memorandum of Understanding
MPC&A	Material Protection, Control, and Accounting
MRI	Mutual Reciprocal Inspection
MS	Milestone
MS&T	Medical Science and Technology
NADS	Navy Area Defense System
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, and Chemical
NBCRS	Nuclear, Biological, and Chemical Reconnaissance System (XM93 FOX armored vehicle)
NCA	National Command Authority
NDAA	National Defense Authorization Act
NDI	Non-Developmental Item
NERVE	an agent nonspecific BW detector
NEST	Nuclear Emergency Search Team

NFIP	National Foreign Intelligence Program
NIS	Newly Independent States
NMD	National Missile Defense
NPC	Nonproliferation Center
NPRC	Nonproliferation Program Review Committee
NPT	Nonproliferation Treaty
NTWS	Navy Theater-Wide System
NUDET	Nuclear Detonation
OATSD(NCB)	Office of the ATSD(NCB)
OCONUS	Outside the Continental United States
O&M	Operations and Maintenance
OSD	Office of the Secretary of Defense
OSIA	On-Site Inspection Agency
OT	Operational Test
PAC	Patriot Advanced Capability
PA&E	Program Analysis and Evaluation
PATS	Protection Assessment Test System
PDD	Presidential Decision Directive
PDM	Program Decision Memorandum
PDUSD(A&T/S&TS)	Principal Deputy Under Secretary of Defense for Strategic and Tactical Systems to the USD(A&T)
PE	Program Element
PKK	Kurdistan Worker's Party
POM	Program Objective Memorandum
P3I	Pre-Planned Product Improvement
Q	fiscal year quarter
Radiac	Radiation Detection, Indication, and Computation
R&D	Research and Development
RDT&E	Research, Development, Test, and Evaluation
recon	reconnaissance
RFP	Request for Proposals
RONS	Remote Ordnance Neutralization System
RSCAAL	Remote Sensing Chemical Agent Alarm
SALAD	Shipboard Automatic Liquid Agent Detector
SAM	Surface-to-Air Missile
SBIR	Small Business Innovation Research
SECDEF	Secretary of Defense
SEI	Specific Emitter Identification
SFAI	Swept Frequency Acoustic Interferometry
SHAPE	Supreme Headquarters Allied Powers Europe

SM	Standard Missile
SOCOM	Special Operations Command
SOF	Special Operations Forces
SO/LIC	Special Operations/Low Intensity Conflict
SR-BSDS	Short Range Biological Standoff Detection System
S&T	Science and Technology
START	Strategic Arms Reduction Treaty
STI	Safeguards, Transparency, and Irreversibility
TADIL-J	Tactical Data and Information Link
TBM	Theater Ballistic Missile
THAAD	Theater High Altitude Air Defense
TIARA	Tactical Intelligence and Related Activities
TMD	Theater Missile Defense
TSWG	Technical Support Working Group
TUGS	Tactical Unattended Ground Sensor
UAV	Unmanned Aerial Vehicle
UGS	Unattended Ground Sensor
UGV	Unmanned Ground Vehicle
ULF	Ultra Low Frequency
UN	United Nations
UNSCOM	United Nations Special Commission (Iraq)
U.S.	United States
USA	United States Army
USAF	United States Air Force
USD(A&T)	Under Secretary of Defense (Acquisition and Technology)
USEUCOM	U.S. European Command
US INTELL	U.S. Intelligence
USMC	United States Marine Corps
USN	United States Navy
USSOCOM	U.S. Special Operations Command
UV	Ultraviolet
VEE	Venezuelan Equine Encephalitis
ver	version (software)
VLF	Very Low Frequency
VSS	Vented Suppressive Shield
VX	designator for a type of chemical nerve agent
WBS	Weapon Borne Sensor
WEE	Western Equine Encephalitis
WMD	Weapons of Mass Destruction