Statement of
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before the
Senate Armed Services Committee
Strategic Forces Subcommittee

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Good afternoon. Mr. Chairman and Members of the Committee, it is my pleasure to appear before you today to present the Department of Defense's Fiscal Year 2001 missile defense program and budget.

The Ballistic Missile Defense Organization (BMDO) is chartered within the Department of Defense to manage, direct and execute the BMD program in order to achieve the following objectives:

- develop options for, and deploy when directed, an anti-ballistic missile system to defend the United States;
- develop effective, rapidly relocatable Theater Missile Defenses to protect forward deployed and expeditionary U.S. armed forces as well as friends and allies;
- demonstrate advanced technologies to enhance missile defense systems; and,
- continue basic and applied research to develop follow-on technologies.

As the Director of the Ballistic Missile Defense Organization, I have identified five major priorities. My first priority is the National Missile Defense (NMD) Deployment Readiness Review (DRR), scheduled for June of this year. This review will assess the technical progress on National Missile Defense and whether enough progress has been made to enable the Administration to decide whether and when to deploy a National Missile Defense system.

The second priority is the development of the Theater Missile Defense (TMD) Upper-Tier Strategy. Working with the U.S. Army and U.S. Navy, we have restructured the Theater High Altitude Area Defense (THAAD) and the Navy Theater Wide (NTW) programs to posture them for deployment upon demonstrating continued success.

Third, we must contain production costs of the Lower-Tier TMD systems. While PAC-3 is making significant progress, technical problems and weather conditions at the test range have contributed to delays and increased costs. Navy Area systems are approaching scheduled flight tests, but are experiencing technical problems. I remain committed to finding ways to reduce and contain the costs of delivering these systems.

Fourth, our research and development is crucial to the continued health of our missile defense programs. I see the need to focus and intensify efforts in this area. Every scarce dollar in the technology budget must be optimized to meet future requirements of missile defense.

Finally, I am focusing on the reduction of decision- and action-cycle times within BMDO. I want to ensure that we are organized in a way that minimizes the layers of communication and authority so we can focus on our core responsibilities. Toward that end, I have reorganized the Ballistic Missile Defense Organization by eliminating layers of management to flatten the organization.

This past year we demonstrated considerable progress. Since March 1999, missile defense has had seven successful intercepts, with six of them using hit-to-kill technology - one National Missile Defense intercept, two THAAD intercepts, three PAC-3 intercepts - and one using focused-warhead technology, the Arrow system. Based on these tests, we know that hit-to-kill technologies can work. We have, however, many more steps to take as we move towards fielding effective missile defense systems. In the months ahead, we have several more TMD and NMD tests scheduled that will involve increasing levels of system complexity and integration.

Because of this progress in our test program in 1999, the Department of Defense has significantly increased funding for the missile defense program. As a result of this increase, we are better able to reduce program risk and take advantage of cost-reduction opportunities and move our programs to the next stage of development and production.

Fiscal Year 2001 Program and Budget

The total Fiscal Year (FY) 2001 budget request for the Ballistic Missile Defense Organization is $4.5 billion. This includes $3.9 billion for research, development, test, and evaluation (RDT&E), $444 million for procurement, and $103.5 million for military construction (MILCON) activities. Combining these three budget categories, National Missile Defense represents $1.92 billion, or 43 percent of the budget. Theater Air and Missile Defense programs account for $1.96 billion, also roughly 43 percent of the budget. We request $37.7 million for Applied Research and $93.2 million for Advanced Technologies, which together represent about 2.9 percent of the budget. BMD Technical Operations accounts for $ 272.6 million and is about 6 percent of the budget. We request $22.6 million for Threat and Countermeasures efforts and $117 million for International Cooperative Programs, which together represent 3 percent of our overall budget. The following chart breaks out the Fiscal Year 2001 budget request by program element for BMDO-managed programs.

Then Year $M **National Missile Defense**	**FY2000**	**FY2001**
NMD Dem/Val*	950.248	1,740.238
NMD Procurement	0.000	74.530
NMD Milcon	15.000	101.595
Theater Air and Missile Defense		
PAC-3 EMD	179.139	81.016
PAC-3 Procurement	343.773	365.457
Navy Area EMD	307.274	274.234
Navy Area Procurement	18.143	0.000
THAAD Dem/Val	523.525	0.000

THAAD EMD	79.462	549.945
Navy Theater Wide Dem/Val	375.764	382.671
TAMD BMC/3 Procurement	0.000	3.975
Joint TAMD Dem/Val	196.566	0.000
FoS E&I	145.657	231.248
MEADS Dem/Val	48.594	63.175
Support Technologies		
Applied Research	88.365	37.747
Advanced Technology Dev.	212.837	93.249
Boost Phase Intercept	4.961	0.000
Space Based Laser**	0.000	74.537
BMD Technical Operations		
BMD Tech Ops	214.445	270.718
BMD Tech Ops Milcon	1.372	1.923
International Coop Programs	81.560	116.992
Threat & Countermeasures	19.343	22.621
Pentagon Reservation Maintenance Fund	0.000	4.775

* $590M in FY99 funding is being applied to FY00 requirements.
** SBL (included under Advanced Tech Development in FY00), which has a separate PE in the FY2001 PB, represents $74M or 1.7 percent of the budget and represents more than half of the total required funding in partnership with the U.S. Air Force

National Missile Defense

Based on recent threat assessments, my program guidance is to be in a position, technologically, to support a decision later this year on whether to deploy a National Missile Defense (NMD) system capable of defending all 50 states against limited ballistic missile attack from states that threaten international peace and security. Recent intelligence estimates indicate that we must be concerned about the possibility that ballistic missile threats from states that threaten international peace and security will increase as they acquire a capability to launch more and longer range missiles with simple countermeasures in the 2005 to 2010 timeframe. As a result, we are enhancing the NMD program beyond the original Capability 1, or "C1," architecture by developing an "Expanded C1" architecture to meet this expanded threat. The Expanded C1 architecture will be capable of defending all 50 states against expected near-term threats larger than the initial C1 architecture was designed to handle.

The Expanded C1 deployment option builds on the revised program announced last year by the Secretary of Defense. For planning purposes, the Expanded C1 system will incorporate 100 ground-based interceptors based in Alaska and an advanced X-Band radar based at Shemya Island, also in Alaska. The new NMD architecture will incorporate upgrades to the five existing ballistic missile early warning radars and, for the purposes of initial launch detection, use the Space Based Infrared System (SBIRS) High, which eventually will replace the existing Defense Support Program satellite constellation. Initial Operational Capability (IOC) for the C1 architecture, consisting of 20 interceptors, still can take place in 2005. The full 100 can be deployed by Fiscal Year 2007. Since the President submitted the FY00 budget to Congress, the NMD program has been increased by $2.3 billion over FY01-05. Between Fiscal Years 2001 through 2005, we have programmed $10.375 billion (in then year dollars) for the NMD program.

In 1999, BMDO commissioned a second independent panel headed by retired General Larry Welch to review the National Missile Defense (NMD) program in light of the program's new structure. The panel's charter was to determine the effects of extending the NMD program by two years and to review the adequacy of the resulting test program. The panel concluded that, although the revised NMD program reduced program risk, it remains a high-risk program. The panel made 18 specific recommendations to reduce program risk further. I support the panel's recommendations and have added $285M across FY01-05 to augment the NMD testing program. This funding will pay for additional hardware for the NMD Kill Vehicle, additional test equipment and testing.

Our greatest challenge continues to be to make sure all NMD elements work together as an integrated system so that it can defeat the postulated threat to our homeland. A successful test program and the timely execution of system-element schedules will provide the answer to the question of greatest interest to us this year: Are we technically ready to deploy an NMD system?

NMD Decision Time Line

We plan to conduct a Deployment Readiness Review (DRR) in June of this year. Although this starts a key decision process, it is the first of three decision milestones in the program over the next five years. This DRR will take place at the Defense acquisition executive level - with full participation from all Department of Defense stakeholders. The DRR will not constitute the actual decision to deploy the NMD system. Rather, it will assess the technological progress to support a deployment decision. The Administration's decision will be based on an assessment of four factors: (1) the nature of the threat; (2) the status of the technology based on an initial series of rigorous flight tests, and assessment of the proposed system's operational effectiveness; (3) system affordability; and (4) assessments of the impact of NMD deployment on the overall strategic environment and U.S. arms control objectives, including efforts to achieve further reductions in strategic nuclear arms under START II and START III.

If a decision is made to deploy, we will simultaneously seek approval for our recommended NMD site and award of the construction contract for that site. A decision to deploy would lead us to conduct a Defense Acquisition Board review to assess the status of the program in Fiscal Year 2001. Based on program performance, we would seek approval to initiate upgrades to the current early warning radars, begin building the X-band ground-based radar and missile site, and start integrating the Battle Management/Command, Control and Communications (BM/C3). In Fiscal Year 2003, we would conduct a second Defense Acquisition Board review to seek approval to procure and deploy the ground-based interceptors as well as the necessary spares and test rounds. All of these decisions will depend on an assessment of our technical and programmatic progress.

NMD System Description

I would like to take a moment to explain how we envision the individual NMD system elements will operate when combined as a fully operational and integrated system. Let us assume a hostile launch to begin the engagement process. Space-based sensors make the initial detection and report a threat launch. DSP, and eventually SBIRS-High, will alert the entire system of a potential ballistic missile attack, cue the radars to erect "search fences" to detect the incoming missile, and start evaluation of engagement options at battle-management centers. When the threat missile crosses into the range of ground-based early warning radars, these radars confirm target missile flight and tracking information. Upon data confirmation, the BM/C3 center cues the X-Band Radar and directs the launch of a ground-based interceptor. The ground-based X-band radar provides high-resolution target tracking data to the interceptor in flight through an In-Flight Interceptor Communications System. This data will be used by the interceptor to maneuver close enough to the target missile for the on-board kill vehicle sensor to discriminate the warheads from decoys and debris. Sensors on the kill vehicle provide final, precise course corrections to enable the kill vehicle to destroy the target. Multiple interceptors launched at each incoming reentry vehicle, either in salvo or in waves (a "shoot-look-shoot" scenario), are expected to increase dramatically the probability of a successful intercept.

NMD Flight Testing

In June 1997 and January 1998, we conducted two very successful seeker "fly-by" tests that allowed us to demonstrate key elements of the kill vehicle. Last October, we also successfully conducted the first of our interceptor tests - destroying a target vehicle in space over the Pacific Ocean. On January 18, 2000, we conducted a second intercept test. Though our Kill Vehicle did not intercept the target warhead, the test successfully demonstrated the compatibility of critical system elements. There are 17 developmental flight tests remaining, all of which will incorporate intercept attempts, in addition to other very important integrated system tests designed to unite the NMD elements into an operational "system of systems." We also will conduct extensive ground testing of hardware and demonstrate the integration of system elements.

The October 1999 integrated flight test, IFT-3, culminated in a remarkable finish. It conveyed to the public the technical complexity of colliding directly with a missile warhead traveling in space at more than 15,000 miles per hour. The ability to do this becomes even more awe-inspiring when one considers the target warhead may be less than five feet long and surrounded by decoys and debris. We accomplished all of our test objectives in IFT-3 - the physical destruction of the target warhead speaks for itself. We now know our interceptor concept works technically, and that one test helped to build our confidence that we can maintain our schedule.

A great deal of attention has been given to the integrated flight test that occurred on January 18 of this year. It was one in a long-line of testing events we have planned through 2005. While many have called IFT-4 a failed test, I take exception to this characterization of this very important and valuable test event.

Viewed in a mission context, IFT-4 was a failure - we missed the RV. The miss speaks for itself. However, in the context of testing, IFT-4 was a successful developmental test that proved under very stressful conditions the X-Band Radar, the Upgraded Early Warning Radar, and the BM/C3 capability of our proposed architecture. The NMD system is one of the most complex systems our country ever has attempted to develop and produce. The interception part of the NMD mission is clearly the most visible and most highly regarded phase, yet we must not lose sight of the fact that the successful integration of the system elements is no less critical. The integration and support aspects of our testing events are transparent to most people, but I assure you that we could not do the job without them.

We will continue to test our national missile defense system based upon strict, proven scientific methods learned over more than four decades of missile development, deployment, and operations. Our tests are designed to weed out flaws. While we strive for success on every test, we do not expect that we will always have it. Very often problems occur and elements of our tests fail. Indeed, we should expect failure from time to time, sometimes spectacular failure, as the price of ultimate success in this highly challenging endeavor. We learn a lot from our testing successes and failures. We gain knowledge and pick up important information from problems and mistakes discovered during testing and incorporate the necessary changes into our systems before they go into our deployed weapon systems. We must ensure that the NMD system we eventually deploy will work with a very high level of confidence - our testing program is designed to do just that.

One more Integrated Flight Test is scheduled before DRR in June. IFT-5 will meet the requirements of an integrated system test in which all the elements of the NMD system will participate together in the engagement and destruction of the target. From FY01 through FY05, we will conduct three intercept flight tests each year. This will allow us to demonstrate the increasing sophistication of the kill vehicle and integrated system. Flight Test 7, scheduled to take place in Fiscal Year 2001, will be the first flight test to incorporate both the exo-atmospheric kill vehicle and the proposed operational booster. Flight Test 13, scheduled for Fiscal Year 2003, will fly the production-configuration ground-based interceptor - including the kill vehicle and booster.

The NMD Flight Test Program follows a very specific path to allow an initial operational capability (IOC) in Fiscal Year 2005. This path includes a number of milestones that, in effect, postpone the need to freeze the interceptor design until the latest possible time dictated by lead-time to the 2005 deployment date. The interceptor remains the element with the highest risk within the NMD architecture. Therefore, by waiting to lock in the interceptor design until after we have tested the production-configuration "round," we can be more confident in the system we will deploy.

The NMD program has been executed along a ***high-risk schedule.*** High-risk has a very specific meaning -- we are executing this program at such an accelerated pace, that significant failure in any of the program elements may well cause us to slip our development timelines. Our recommended approach, however, is designed to handle this schedule risk by phasing our decisions based on test and programmatic performance, allowing more time to develop, demonstrate and, ultimately, deploy the system elements in a prudent manner. We have a demanding challenge and we are managing aggressively to meet it.

Deployment Planning Activities

While we have been developing and testing the system elements, we also have been proceeding vigorously on deployment planning activities. We have conducted fact-finding and siting studies for two potential site locations - North Dakota and Alaska. We have initiated site designs for the X-band radar, weapon sites, and BM/C3 facilities. On October 1, 1999, we published in the Federal Register a Notice of Availability of the NMD Program's Deployment Draft Environmental Impact Statement (EIS), inviting the public to review and comment on that document. The public comment period ended on January 19, 2000. In October and November of last year, over 650 people attended public hearings on the draft EIS in Alaska, North Dakota, and Washington, D.C. We are considering the input received as we prepare the Program's Final Environmental Impact Statement, which is scheduled for completion later this spring. As required by law, the results of the EIS will represent one of many inputs into the deployment decision process.

We initiated ground-based element facility planning and design in FY99 and have completed the 65% design for the weapon system and X-band radar facilities. We will start the design of the BM/C3 facilities later this year. For FY01, we are submitting a request for construction of the tactical and support facilities for an Expanded C1 capability. This will consist of an X-Band Radar Complex, a Ground-Based Interceptor Missile Launch Complex, and a series of dispersed facilities for Battle Management/Command, Control, and Communication. We request a FY01 MILCON appropriation of $101.6M for NMD.

In accordance with budget guidance, we will further define the facility and systems requirements associated with potential deployment of 100 interceptors in an Expanded C1 architecture by FY07, including the installation of 80 additional missile silos and non-tactical facilities. In order to remain on schedule for the deployment of the first 20 missiles in FY05, we plan to issue a Request for Proposal and award the contract(s) this fall, if approval for deployment is given.

We have made important technical progress in many areas in the National Missile Defense program. Nevertheless, this is an extremely complex program and we still have many significant challenges ahead of us.

Theater Missile Defense - the Family of Systems

The Family of Systems (FoS) concept is a flexible configuration of highly interoperable theater missile defense systems capable of joint and combined operations that allows the joint force commander to tailor the right mix of systems and capabilities according to resources, situation, and threat. We request $231.2M in FY01 to enhance the effectiveness of our FoS. FoS seeks to link the TMD core programs so that they fight as one system and obtain a force multiplier advantage. The program builds interoperability by conducting assessments to identify weaknesses, define architectural and engineering solutions, and integrate and test those solutions. BMDO has a disciplined acquisition approach for addressing warfighter interoperability requirements that builds on a foundation of legacy and developmental systems acquired by the Services. The near-term FoS effort is more of a development and integration effort than a traditional acquisition program insofar as it is expected to define software and hardware changes to existing systems to enable them to interoperate effectively.

Upper-Tier TMD Strategy

The medium-range ballistic missile threat is emerging very rapidly. More countries are acquiring ballistic missiles with ranges between 1,000 and 1,300 kilometers. North Korea has developed the No Dong-1 missile. In July 1998, Iran conducted a partially successful flight test of its Shahab-3 missile, which could significantly alter the military equation in the Middle East by giving Iran the capability to strike targets in Israel, Saudi Arabia, and most of Turkey.

DoD studies have consistently validated the need for two Upper-Tier systems. The Theater High Altitude Area Defense (THAAD) program provides endo- and exo-atmospheric capabilities to engage a full spectrum of Theater Ballistic Missiles (TBMs). It is able to provide inland area defense for those scenarios where this is required. The Navy Theater Wide (NTW) program enhances these capabilities by providing early exo-atmospheric engagement opportunities in the ascent phase (i.e., the portion of the ballistic missile trajectory after boost and prior to apogee), which increases battle space and area covered, and negates weapons of mass destruction at greater distances from the intended target.

Late in Fiscal Year 1999, the Department of Defense (DoD) embarked on an intensive review of the THAAD and NTW programs, two programs that, once deployed, are intended to defeat the medium-range ballistic missile threat. The purpose of this review was to meet Congressional guidance and to reduce risks and costs.

The Upper-Tier Strategy complies with the law. THAAD was fully funded in the FYDP based on the successful completion of the demonstration phase. NTW was fully funded through FY02. The decision to provide full outyear funding for an FY2006 contingency capability has not been made pending results of AEGIS LEAP Interceptor (ALI), flight-testing. The decision to fund, and at what level, will be made on performance. Embedded in the acquisition strategy for both programs are opportunities to add funding or accelerate the release of an early capability based on success.

Based on two successful THAAD intercepts, we revised the Upper-Tier guidance during the summer of 1999 to cancel the remaining THAAD Program Definition/Risk Reduction (PD/RR) flight tests and shift emphasis from flight-test execution to missile redesign and planning for the Engineering, Manufacturing and Development (EMD) phase of the program. Additionally, we developed an alternative acquisition approach to provide a phased introduction of capability rather than initially fielding the objective system.

Prior to this review, the THAAD program was pursuing a standard acquisition approach to field an objective capability by defining requirements, designing and fabricating hardware, conducting ground- and flight-testing and eventually fielding a capability to meet threshold operational requirements. In order to pace the threat and obtain early capability with reduced risk, an evolutionary approach was proposed in accordance with current DoD policy. This resulted in a First Unit Equipped (FUE) for an initial configuration (or C1) in Fiscal Year 2007. C1 will include the capability to defeat all Upper-Tier threats expected by 2007, and it will meet the key performance parameters outlined in the Operational Requirements Document (ORD). Sophisticated countermeasures and battalion operational software are deferred to the next configuration (termed C2) that is planned for fielding in 2011.

We are reviewing options for reaching the objective NTW capability. NTW has consistently pursued a block upgrade approach to acquisition, meaning that a Block II objective system, which has yet to be fully defined, may follow a Block I initial capability. The Navy will continue this evolutionary approach, through an initial system flight test program (ALI), followed by three developmental increments of the Block I system. These increments, Block IA, B, and C, provide the warfighter with ascent-phase TBMD capability that evolves toward the Block II objective system using a "block-within-a-block" (BWB) methodology.

Since the Standard Missile 3 (SM-3) missile will mature more quickly than the AEGIS Weapons System software, the NTW program can deliver a warfighting capability earlier through the use of a reconfigurable ship. Such a ship, which can shift computer programs to accomplish either the Upper-Tier TBMD mission or conventional missions in accordance with the tactical situation, will reduce the development complexity of the software. Under the revised Upper-Tier Strategy, we will be positioned to pursue an NTW contingency capability (Block IA) in the 2006 timeframe, with a Block I reconfigurable ship (Block IB) FUE in the 2008 timeframe. The Block IB capability is designed to pace the threat expected at that time. The FUE for the fully ORD-compliant Block IC multi-mission ship could occur in 2010. We are also considering going straight to Block II.

Complementing this program is our cooperation with Japan on research aimed at improving four key components of the SM-3 missile. This cooperation was initiated when we signed a Memorandum of Understanding with Japan in August 1999 to govern the first phase of this collaborative activity. Preliminary planning is already underway for follow-on work with Japan to demonstrate and validate the products of the initial research. We will integrate this cooperative work into NTW program planning.

Current NTW funding allows the program to complete ALI flight-testing through FY02 that is key to determining whether the system works, continuing the U.S./Japan cooperative project noted above, and assuring an industrial capability throughout the FYDP that continues to advance key technologies required to field an NTW capability.

When we initiated the review of its Upper-Tier Strategy, there were not sufficient funds to enable both programs to field a capability in 2007. In a fiscally constrained environment, we had to balance requirements, benefits, and risks in order to provide a highly effective layered-defense against emerging threats. The revised Upper-Tier Strategy conforms to the three tenets of the FY00 Defense Authorization Act, Section 232. The current strategy also provides opportunities for accelerating each program later should the programs demonstrate success. This is a key feature of our strategy. Both Upper-Tier programs should proceed based on demonstrated success. Although we have funded THAAD adequately in the FYDP, outyear funding for the NTW baseline program will be reviewed on successful ALI flight-testing.

Theater High Altitude Area Defense. In June and August 1999, the THAAD system conducted two very successful intercepts. These successes were a welcome development after a series of disappointing failures. The THAAD and PATRIOT PAC-3 intercepts gave us very strong confirmation of the hit-to-kill technologies we have been pursuing. We reported last year that we were confident that the basic THAAD system and missile designs were sound, and that the failures resulted from poor quality control during production of the original Program Definition/Risk Reduction (PD/RR) missiles. Based on all THAAD testing, to include the success of those two hit-to-kill intercepts, the Under Secretary of Defense (Acquisition, Technology & Logistics) determined that the key exit criteria for the PD/RR phase were met and waived the requirement for three intercepts before entering EMD. As required by the Fiscal Year 2000 Defense Authorization Act, we are providing the Report to Congress on the rationale for waiving the third intercept.

Consequently, we have shifted the THAAD program's emphasis from flight test execution in the demonstration phase, and we are now preparing to enter the EMD phase using lessons from PD/RR. The Milestone II decision to enter the EMD is currently planned for April of this year. As we prepare to enter EMD, we are making use of the lessons learned during the Program PD/RR phase, and expect to avoid problems encountered with the PD/RR missiles.

The $549.94M in FY01 for the THAAD program will continue the design and development of the C1 hardware and software. System Preliminary Design and segment Critical Design Reviews will be conducted. Part of this development will include lethality studies and advanced algorithm development. Key test facilities such as the System Integration Laboratory will be prepared for system-level testing. Integration activities with the Air and Missile Defense Command and Control System will be continued. Finally, preparations begin for EMD flight-testing.

Navy Theater Wide. The NTW program has experienced several successes over the past year. In September 1999, the Navy Theater Wide program successfully demonstrated the first shipboard launch of a Control Test Vehicle. Follow-on flight tests are scheduled for later this year leading up to the first Navy Theater Wide intercept attempt during the first quarter of Fiscal Year 2001. Additionally, the Navy Theater Wide Program has successfully completed significant developmental ground-testing of the third stage rocket motor, full-scale and sub-scale lethality testing, and demonstration of significant interoperability potential through data exchange with THAAD and PAC-3 during recent missile test events.

Over the next few years, a significant amount of testing is planned. These tests will mitigate the higher risk in many areas and obtain valuable data to support system-engineering requirements. The $382.67M in FY01 for NTW will continue ALI flight-test activities as well as the Block I system engineering, program management, risk reduction, and test planning efforts. Lethality requirement definition and performance testing also continue. Funds are included to procure target assets to support flight-testing. Finally, funding will continue research, analysis and development efforts with the Government of Japan on selected NTW Block II technologies.

Lower-Tier TMD Strategy

The Lower-Tier strategy focuses on enhancing currently fielded systems (PATRIOT, AEGIS) to provide capability as soon as possible. The strategy also exploits emerging technologies to develop a highly mobile defense for maneuver forces under the Medium Extended Air Defense System (MEADS) program. The overarching goal of the near-term Lower-Tier systems is to deploy an effective and affordable TBM capability as soon as technically possible.

Increasing costs, driven primarily by technical challenges, have been a problem for the Lower-Tier systems. The delivery dates for the PATRIOT Advanced Capability 3 (PAC-3) and Navy Area systems have moved to FY01 and FY03, respectively. The PAC-3 and Navy Area programs still require further development and testing, and still have challenges to face to meet the dates we have set for them.

In order to optimize resources and coalition forces effectiveness, we are aggressively pursuing international cooperative participation in the Lower-Tier programs. This will include the MEADS program and the potential for extensive foreign military sales of PATRIOT and, possibly, Navy Area systems. We must, of course, balance the sharing of the systems and technical capability with safeguarding of critical technologies.

Patriot Advanced Capability 3 (PAC-3). This has been a busy and successful year of activity on the PAC-3 program. Every time the system has been tested, it has been successful - all five of the PAC-3 tests have met their goals, including intercepts on the last three: March 15, 1999; September 16, 1999; and February 5, 2000.

The majority of the flight test program still lies ahead. The remaining PAC-3 missions will consist of 14 PAC-3 missiles intercepting different classes of targets. Follow-on tests include developmental and operational tests, which are designed to test the incremental hardware and software upgrades to the PAC-3 system using increasingly complex scenarios.

On October 12, 1999, we conducted a review and verified that all the exit criteria for entering low-rate initial production were met. The ensuing Acquisition Decision Memorandum officially authorized the award of a contract for the assembly of the first 20 PAC-3 missiles. On December 3, 1999, this contract was awarded to Lockheed-Martin. In parallel to this, a second contract to build three additional missiles for Air-Directed Surface-to-Air Missile (ADSAM) testing and conduct of an engagement against a long-range target was awarded on December 8, 1999.

I remain fully committed to reducing production costs of the PAC-3 missile. My goals for the overall program are to reduce costs, procure as many missiles as possible, deliver an operational capability on time, and live within the current budget estimate.

In October 1999, we established a joint government-industry missile-production cost-review team. This team focused on government and contractor costs related to missile production. The team established the baseline missile cost, developed a prioritized set of cost reduction initiatives, and produced an implementation plan to execute the cost reduction initiatives. The results of this work look promising. In the next few months, I will be adjusting our PAC-3 strategy to incorporate the team recommendations, which have the potential to substantially increase missile quantity for the same funding. I have commitment from Lockheed-Martin to make it work, and I look forward to telling you more about our progress in coming months.

The PAC-3 program request for FY01 is $81M in EMD and $365M in procurement. This funding will complete the engineering, manufacturing, and development and testing of the PAC-3 Configuration-3 system, including the PAC-3 missile. The procurement funding will buy up to 40 PAC-3 missiles and spares and upgrade six Configuration-3 ground systems.

Navy Area. The Navy Area sea-based missile defense capability consists of modifications to the AEGIS combat systems and the SPY-1 radar to enable the ship to detect, track, and engage theater ballistic missiles using an updated version of the Navy's Standard Missile. The Navy Area program is currently in the EMD phase and is nearing the first series of 8 flight tests. These tests are scheduled to begin in May at the White Sands Missile Range (WSMR). The program recently completed a rebaselining effort to field the system within the available funding. First Unit Equipped will occur in December of 2002. This program still has challenges. I had an independent review group examine the program cost risk. We understand these risks better, but I will not feel confident until the technical risks are retired by successful intercepts.

This last year, two AEGIS cruisers, the USS Port Royal, and the USS Lake Erie were augmented with TBM software and the ability to test-fire the new TBM missile. These ships, which we call "Linebacker," are now providing critical feedback to influence the tactical design improvements and modifications to the AEGIS combat system. They will conduct a variety of at-sea tests, develop core doctrine and tactics, and support our flight-testing activities.

The Navy Area program request for FY01 is for $274.2M in EMD funding. This will permit completion of the White Sands Missile Range and Linebacker, at-sea, flight-test events. Successful WSMR flight intercepts provide the technical basis to begin low-rate initial production using the Navy's weapons procurement funding. This funding also pays for continued development of the Aegis ship systems, including software development.

Medium Extended Air Defense System. We recognize the need for maneuver force protection, added mobility, and the value of international cooperation. We previously had restructured the MEADS program to include a three-year Risk Reduction Effort for the design and development phase ending in 2002. We have now augmented the 3-year risk reduction effort and fully funded the MEADS program by adding $714M from FY02 to FY05. MEADS is currently scheduled to achieve FUE in FY12.

The MEADS request for FY01 is for $63.2M in Dem/Val funding. This funding, combined with funding from our international partners, Germany and Italy, will enable continued development of prototype launcher, mobile fire control radar, and BMC4I hardware and associated software and digital end-to-end simulation of the MEADS system.

Integrated Technology Program.

Technology development has played a crucial role in the recent successful trials of the BMD systems. Today's missile defense systems rely heavily on technology matured and demonstrated by BMDO and the Services. Our Integrated Technology Program continues to focus on enhancing the effectiveness of our current major defense acquisition programs (MDAPs) and reducing associated costs while also strategically investing in advanced concepts and capabilities to defend our nation against future missile threats.

Our spiral development strategy relies on an integrated technology program to demonstrate and mature technology for insertion into the MDAPs. We are accomplishing this integrated approach through increased communication between our technology developers and our MDAP program managers and the development of coordinated transition plans. These transition plans detail the development, transition, and insertion strategies for all component technologies supporting spiral development.

While seeking to develop technologies to counter future threats, our Advanced Interceptor Technology program, along with our other technology programs, are developing cost-saving components for some of our acquisition programs. These near-term cost-saving technology programs should allow us to reduce per unit costs, thereby enabling us to procure increased numbers of interceptors and other ballistic missile defense system components within available fiscal resources.

It has become increasingly difficult to maintain an aggressive technology program in the face of competing demands presented by the MDAPs. In the past, we were able to fund more robust technology programs, such as the Lightweight Exo-Atmospheric Projectile (LEAP), which is now the basis for the Navy Theater Wide and NMD interceptors. At current funding levels, we are able to fund far fewer programs for next-generation weapon systems. Since most of our financial resources are focused on development, production, and deployment of our family of systems, we need to invest in technology development if we are to keep pace with the emerging threat. We will continue to examine ways to insure technology funding in the future.

Space-based Laser Project

The key focus of our Advanced Technology directed energy program remains the chemical Space-Based Laser (SBL). The SBL concept we envision would provide the United States with a highly effective, continuous boost-phase intercept capability for both theater and national missile defense missions. Working with ground-, sea-, and air-based missile defenses, boost-phase intercepts by the SBL could "thin out" missile attacks and reduce the burden on mid-course and terminal-phase defenses.

In the near-term, the SBL project will focus on ground-based efforts to develop and demonstrate the component and subsystem technologies required for an operational space-based laser system and the design and development of an Integrated Flight Experiment (IFX) vehicle that could be tested in space in 2012.

The SBL project is jointly managed by BMDO and the U.S. Air Force, and is executed by the U.S. Air Force on our behalf. Both BMDO and the Air Force request funds in the Fiscal Year 2001 budget for the SBL project. We are working jointly, pooling resources and ensuring the program is following a clear direction. The BMDO budget contains $74.5 million and the Air Force budget has $63.2 million, for a combined request of $137.7 million.

Ballistic Missile Defense Technical Operations

The BMD Technical Operations program manages capabilities to assure the execution of the NMD, TMD and FoS, and Technology programs. This includes BMD systems architecture and engineering analysis, test resources and facilities, modeling and simulation, and phenomenology data collection and analysis. Although it provides this foundation for the entire missile defense program, Technical Operations represents only 6% of the budget.

International Cooperative Programs

I have touched on some of our international activities with allies. The Department fully funded the MEADS program and added $714M from FY02 to FY05 towards the design and development of the system. Our collaborative work with Japan has been funded at $36M through FY01. Now let me look at two other International Cooperative Programs - one with Israel and the other with Russia.

Cooperative Programs with Israel

The U.S.-Israeli Arrow Program has made significant progress toward the deployment early this year of a contingency-capable Arrow Weapon System. On November 1, 1999, Israel successfully conducted a fully integrated system intercept test against a ballistic missile target. The Arrow II interceptor was controlled to a successful intercept by the other elements of the Arrow Weapon System„the surveillance/fire control radar (Green Pine), fire control center (Citron Tree), and launcher control center (Hazel Nut Tree). The successful test satisfied Israeli Air Force requirements for initial operational capability. Once training and equipment inventory requirements are met, I expect the Israeli Air Force to declare the system operational as a contingency capability. Additional funds were provided to allow Israel to complete the procurement of a third battery of the Arrow system.

Bilateral activities continue toward development of an Arrow Weapon System that is interoperable with U.S. TMD systems. Interoperability validation will result in the Arrow Weapon System having a U.S.-validated capability to interoperate with U.S. PATRIOT and Navy Area TMD systems. We are continuing efforts to use the Israeli Test Bed (ITB) and the Israeli Systems Architecture and Integration (ISA&I) analysis capabilities to assist with the deployment and future upgrades of the Arrow Weapon System.

The $81.2M in FY01 for the Israeli Cooperative Project continues the Arrow Deployability Program, which includes funding to adjust the U.S. cost share of development so that Israel can procure components for a third Arrow battery. On-going Arrow flight tests will continue to validate and expand the Arrow battlespace. Improved threat models and an Arrow II update are incorporated in the ITB that support U.S. and Israeli standard operating procedure development and CINC EUCOM exercise requirements. Finally, evaluation of Arrow performance continues in conjunction with future emerging threats.

Cooperative Programs with Russia

The Russian-American Observation Satellites (RAMOS) program currently is my agency's most significant cooperative effort with Russia. The program originated in 1992 to develop and test space-based surveillance technologies jointly. Early in 1999, the associated technology objectives were assessed to be lower in priority than other critical technologies needed to address future ballistic missile threats. We then proposed an alternative aircraft-based cooperative program, which the Russians did not accept as a substitute for the two-satellite concept.

In 1999 we reviewed the program and determined that continuing the development of a space-based experiment would better support our proposed program of cooperation with Russia. Therefore, we are proposing a revised two-satellite project, similar to the original RAMOS concept. If the United States and Russia agree to proceed, we envision that the revised RAMOS program will cost about $344 million over Fiscal Years 2000-2006.

Threat and Countermeasures

Our threat and countermeasures program provides us with intelligence data on all foreign missile threats. This information is critical to the planning and execution of the TMD and NMD programs and serves as the basis for the threat specifications against which current and future defensive systems are designed. The program produces a series of carefully constructed illustrative missile attack scenarios reflecting adversaries' systems and operating concepts - including simulated flight trajectory information - for use in missile warfare engagement modeling and simulations. Wargames with this information are conducted at the Joint National Test Facility in Colorado Springs, Colorado. We request $22.6M for this activity in FY01.

BMDO Charter and Reorganization

While I am accountable for providing for the procurement and fielding of TMD, NMD, and other antiballistic missile systems as they may be assigned to me, I am also responsible for the transition of BMD systems to the Military Departments and ultimately to the Combatant Commands for operational use. Interest has been raised recently about how we are implementing guidelines in our charter provided by DoD to transfer procurement funds for major defense acquisition programs, in this instance our lower-tier systems, from BMDO to the military services. The challenge before me is to strike the right balance of oversight. We are continuing to study ways to determine the appropriate timeline for the transition of responsibilities for each system to the Services in light of my obligation to maintain a robust acquisition strategy within our Family of Systems architecture. There is no request to transfer these programs in this year's request.

Recognizing that ballistic missile defense systems soon will enter limited production and be delivered to the operating forces, we are reorganizing to meet the challenge of managing both the R&D and the acquisition responsibilities spelled out in our charter. I share the concern of the Congress about technology management and have begun instituting significant changes in our technology programs. My reorganization initiative reflects a transition from an organization oriented towards early technology R&D and demonstrations to an acquisition-focused agency responsible for introducing advanced technology and complex proven weapon systems to combatant forces. Moreover, I have flattened the BMDO management structure in order to reduce decision and action cycle times, which I believe is necessary if I am going to achieve my goal of delivering what we promise.

Summary

As we look forward to the DRR, we have achieved several notable and reassuring successes in our NMD testing program. We are making substantial progress in our Upper-Tier systems, moving them towards development and production. And we are on the verge of achieving major milestones leading to deployment of our Lower-Tier systems. I believe our missile defense programs can and will contribute significantly in the very near future to our national security, and that we are funding them accordingly.

Mr. Chairman, I am more convinced than ever that effective missile defense is crucial to the defense of the nation and its armed forces. The missile threats facing our nation, our armed forces, and our allies are immediate and growing. While I expect significant complex technical and management challenges in our program, it is demonstrating increasing success, and I am confident that we are aggressively addressing the right issues at the right time.

Mr. Chairman, that concludes my remarks. I would be delighted to address the Committee's questions.