DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 2008

WEDNESDAY, APRIL 25, 2007

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:35 a.m., in room SD–192, Dirksen Senate Office Building, Hon. Daniel K. Inouye (chairman) presiding.

Present: Senators Inouye, Dorgan, Feinstein, Mikulski, Stevens, Cochran, and Shelby.

DEPARTMENT OF DEFENSE

MISSILE DEFENSE AGENCY

STATEMENT OF LIEUTENANT GENERAL HENRY A. OBERING III, UNITED STATES AIR FORCE, DIRECTOR

STATEMENT OF SENATOR DANIEL K. INOUYE

Senator INOUYE. I am pleased to welcome Lieutenant General Obering, Director of the Missile Defense Agency (MDA) and Lieutenant General Campbell, who wears three hats—Commanding General of the U.S. Army Space and Missile Defense Command, the U.S. Army Strategic Forces Command and the Joint Functional Component Command for Integrated Missile Defense. They are here before the subcommittee today to discuss the fiscal year 2008 budget request for missile defense.

Gentlemen, it's been a banner year for missile defense. After nearly 25 years and over $90 billion spent, I believe we can finally say, with confidence, that we have turned the corner. The United States has a system in place that could be operational if needed. Indeed, when North Korea tested multiple missiles last January, parts of the missile defense system were on alert, tracking, and ready to respond.

You should be proud of the agency's accomplishments. In the past year alone, the ground-based missile defense (GMD) interceptor, the aegis sea-based missile defense system and the terminal high altitude area defense (THAAD), the theatre high area altitude defense system all succeeded as designed at intercepting targets which simulated attacking missiles.

Today we face a new challenge. It is time to get these missile defense capabilities operational and fielded. It's time to move from research and development to fielding a system that is fully tested

and fully capable. We have the pillars in place to do this with GMD, aegis, and THAAD. These programs require our full attention.

It is these programs that will serve as a basis for our missile defense capabilities for decades to come and I'm pleased to see that the fiscal year 2008 budget request goes a long way toward accomplishing this. However, there are many issues that I hope you will address today regarding the nearly $9 billion budget request before the subcommittee, including the need for the European Third Site, our progress and cooperation with the Japanese on missile defense and the introduction of a space test bed in the missile defense program.

I thank both of you for appearing before the subcommittee and I look forward to hearing your remarks but before we do, may I call upon the vice chairman, Senator Stevens.

STATEMENT OF SENATOR TED STEVENS

Senator STEVENS. Thank you very much, Mr. Chairman and Generals. I apologize for being a little late. You've heard the chairman's statement and if there is anything that stands out about this program is that it's been totally supported on a bipartisan basis by this subcommittee and I stand by and endorse everything that the chairman has said. I look forward to some questions when we get to that point. But I too, congratulate you on the continued success of this program and I look forward to working with you on it. Thank you.

Senator INOUYE. Thank you. Senator Shelby.

Senator SHELBY. Thank you, Mr. Chairman. I'll be brief. I just want to welcome both General Campbell and General Obering and I agree with you, Chairman Inouye, that we have turned the corner after many years and I look forward to their testimony today. I think we will see more progress in this same area. Thank you, Mr. Chairman.

Senator INOUYE. Thank you, Senator. General Obering.

General OBERING. Good morning, Mr. Chairman, Senator Stevens, Senator Shelby. I'm honored to have this opportunity. I ask that my written statement be entered into the record.

This morning, I would like to emphasize very briefly, four key points. First, the ballistic missile threats are real and growing. Now is not the time to cut back America's efforts to defend our homeland, deployed forces, allies, and friends from these threats.

Second, the integrated layered missile defense system that thousands of Americans have been developing, fielding and deploying, works and is having an impact. Third, we are developing and fielding missile defense capability at an unprecedented pace within our budget constraints, using the flexible acquisition authorities that you have given us.

And fourth, we are gaining widespread international support and cooperation. In the last year, as you said, we have seen aggressive ballistic missile development and test efforts in North Korea and Iran as well as terrorist use of ballistic rockets in attacks against Israel.

So far this year, the pace of foreign ballistic missile testing is roughly twice that of last year, reflecting a determination to ac-

quire these valuable weapons, a value generated by the historical act of deployed defenses against them. Therefore, it is critical that we continue to develop, field, and deploy missile defenses to devalue these weapons.

Last summer, when North Korea launched several missiles capable of striking our allies and deployed forces in the Pacific with an intercontinental ballistic missile (ICBM) believed capable of striking the United States, we were able to provide the President an option—an option to activate an integrated missile defense system, a system that I have confidence in. This confidence is borne in our test program, which accounts for almost $2 billion per year.

We have taken on the challenge of realistically testing a complex system that covers more than 10 time zones and that intercepts warheads, both in the atmosphere and in space. The Director of Operations Test and Evaluation and I have approved an integrated master test plan, which includes criteria for operational realism.

In particular, this past September, we conducted a long-range intercept flight test that involved the use of operational crews, operational fire control, and fielded software. We also used operational sensors and an operational interceptor launched from an operational missile field. Over the past year, the Missile Defense Agency has conducted more than 35 major tests and successfully met our primary test objectives in 15 of 16 flight tests and yesterday, we successfully launched the near field experimental satellite into low Earth orbit.

Overall, since 2001, we have built a record of 26 successful hit to kill engagements and 34 attempts. This does not mean that there may not be setbacks in the future, because our test schedule remains very aggressive. For the remainder of this year, we plan to conduct two more long-range intercept flight tests, four aegis flight tests, two terminal area defense flight tests, one Israeli arrow test, and dozens of ground tests.

We have also been successful in the unprecedented fielding and deployment of capability to the warfighter, thanks to an underlying acquisition approach that gives us the flexibility to manage risk while continually upgrading the program.

As a result, in just over 30 months, since June 2004, we have in place 17 long-range interceptors in Alaska and California, modified 16 aegis ships for missile tracking with 7 of those ships able to launch the 20 sea-based interceptors that we have fielded. We have upgraded three land-based early warning radars, delivered two transportable radars and one massive sea-based X-band radar and we fielded command and control capabilities in Hawaii, Alaska, Colorado, Nebraska, Washington, and the United Kingdom. Using our approach, we have achieved in 2½ years what would have taken two or three times longer with the standard process.

Our acquisition flexibility has also allowed us to implement numerous cost saving measures. We have reduced unneeded overhead by approximately $1.8 billion from 2006 to 2011. More specifically, we saved enough money in the ground-based mid-course program alone to purchase four more interceptors. I believe that rolling back this flexibility would be a grave mistake for the warfighters and for the taxpayers.

The inclusion of U.S. Strategic Command and the other combatant commands in our development, testing, training, and fielding activities has been another key to the success. We worked with them closely and the services from defining and prioritizing requirements to transition and transfer plans for operations and support.

Based on this solid foundation, we are now requesting $8.9 billion for 2008, with more than 75 percent of those funds or $7.1 billion going to near-term capabilities and the remainder of $1.8 billion allocated to develop defenses against the threats that may loom tomorrow.

This budget reflects a three-part strategy. First, we seek $5.9 billion to maintain and sustain an initial capability that includes the fielding of up to 44 long-range interceptors in Alaska and California, deployment of up to 132 sea-based interceptors on 18 aegis ships, deployment of two mobile terminal air defense fire units with 48 interceptors and expanding our critical command, control, battle management and communications element. Sustaining its overall capability is approaching $1 billion per year.

Second, we seek $1.6 billion to close the gaps and improve our capability to keep pace with growing threats. This objective does include the fielding of 10 long-range interceptors and a mid-course radar in Europe to defend our deployed forces and allies in that theatre as well as providing additional protection to the United States. We have entered into discussions with Poland and the Czech Republic to host these assets and we have been engaged with our North Atlantic Treaty Organization (NATO) partners and the Russians.

In fact, just last week, I appeared before both the NATO Council and the NATO Russia Council to brief our proposals for missile defense. The Secretary General said it best afterward when he stated that the NATO Alliance is in absolute agreement that there is a shared perception of the threat, which must be addressed, and that NATO is committed to indivisible security. He went on to state that there were no objections voiced in the Alliance to the United States, Czech, and Polish proposal and that the proposal would not change the strategic balance between the United States and Russia.

Finally, we request $1.4 billion for the third component of our strategy to develop options for future threats, options which include boost phase defenses and the ability to provide persistent space-based global detection and tracking. Missile defense is global in nature and we have an increasing number of allies and friends joining us in our efforts.

Japan remains one of our closest partners in missile defense. Together, we have successfully flight-tested new nose cone technologies and agreed to co-develop a larger version of the standard missile 3. We are working closely with the United Kingdom and Denmark to upgrade existing early warning radars. We have also signed cooperative agreements with Australia and Italy and continue to work with Israel on both medium- and short-range missile defenses. And we have begun collaborating on missile defense with many, many other nations.

In closing, I want to emphasize that the threat we are facing from ballistic missiles is real and growing. As we look to the gathering clouds of the threat on the horizon, I believe that we are reaching a critical point. Moving ahead strongly with our allies in building missile defenses, we can send a strong message to our enemies. Investing in ballistic missiles is just not worth it. We can and will destroy them if used against us or our allies. But if they continue to threaten us or our allies, I want to ensure that we have an answer for the people when they ask us, as they did last summer, can you defend us against these weapons?

We have overcome setbacks and technical hurdles, as you said but thanks to the support from this subcommittee and Congress, we are succeeding in our mission and we have absolutely no reason to slow down. Thank you very much for the opportunity to appear before you and I look forward to your questions.

Senator INOUYE. I thank you very much, General Obering.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL HENRY A. OBERING III

Good morning, Mr. Chairman, Senator Stevens, distinguished members of the committee. It is an honor to present the Department of Defense's fiscal year 2008 Missile Defense program and budget.

I am pleased to report that 2006 was a year of significant accomplishment for all aspects of our missile defense program. We made substantial progress in developing, testing and fielding an integrated, layered Ballistic Missile Defense System (BMDS) to defend the United States, our deployed forces, and our allies and friends against ballistic missiles of all ranges in all phases of their flight.

Of the $8.9 billion we are requesting in fiscal year 2008, we will allocate $7.1 billion for near-term efforts and $1.8 billion for longer-term programs. In the near-term, we seek to build on, and sustain, our current capability to defend the homeland against limited long-range ballistic missile threats and protect allies, friends and deployed forces against short- to medium-range threats. To achieve this goal, we intend to complete by the end of 2011 the fielding of up to 44 Ground-based Interceptors (GBIs) in Alaska and California; enhance our early warning radars in Alaska, California and the United Kingdom; integrate the Sea-based X-band (SBX) radar into the BMD system; deploy up to 132 sea-based Standard Missile-3 (SM–3) interceptors on 18 Aegis engagement ships; and expand our command, control and battle-management network by establishing three new command and control suites at U.S. Strategic Command, U.S. Pacific Command and U.S. Northern Command.

We also seek to close gaps and improve our capability to defend against a growing Iranian threat. We will continue the initiative we began this year to field 10 long-range interceptors and a midcourse radar in Europe beginning in 2011. This initiative is essential for a robust, layered defense of the homeland against long-range threats from the Middle East. It will also extend this defense to our deployed forces, allies and friends in the region who currently have no defense against longer-range ballistic missiles. To improve our capabilities to defeat more complex threat suites, our Multiple Kill Vehicle (MKV) program will allow us to engage multiple warheads and countermeasures with a single interceptor launch. Delivering this volume kill capability is important to the warfighter and is one of our top priorities.

For the longer-term, we are developing the Space Tracking and Surveillance System to provide a persistent, near-real-time global detection, tracking and fire control capability. This system will significantly increase the BMD system's agility and flexibility to respond to future worldwide emerging threats. We also continue to pursue boost-phase intercept capabilities in order to increase the "depth" of our integrated, layered system. Boost-phase defenses promise to increase our intercept opportunities and destroy enemy ballistic missiles when they are most vulnerable. The Airborne Laser (ABL) remains our primary boost-phase program. Based on the Defense Science Board's recommendation, we're continuing the high-acceleration Kinetic Energy Interceptor (KEI) booster development effort as an option in the event ABL does not meet critical knowledge points in its test program. The United States-Japanese cooperative development of a follow-on SM–3 interceptor to give the Aegis system an intercontinental ballistic missile (ICBM) intercept capability, a robust

sea-based terminal capability to defeat shorter-range threats, a modest experimental Space Test Bed, and our continuing advanced technology efforts all support the goal of closing capability gaps in the system.

THE EVOLVING SECURITY ENVIRONMENT

This past 4th of July, millions of Americans were made aware of just how real the threat from ballistic missiles is and how vital the missile defense program is to our national security. With the launches of the short-, medium- and long-range missiles by North Korea, missile defense became an urgent matter overnight. Because of the efforts of thousands of Americans dedicated to this program, we were able to activate a missile defense system to protect the United States had a threat emerged.

In November 2006 and January 2007 Tehran conducted several short- and medium-range ballistic missile and rocket launches. In the November exercises Iran demonstrated for the world its offensive capabilities via televised broadcasts.

North Korea and Iran dedicate significant resources to acquiring ballistic missiles, to include new medium- and intermediate-range systems capable of reaching forward-deployed U.S. forces and our allies and friends. North Korea continues to work on intercontinental-range systems capable of reaching the United States. In addition, our intelligence community assesses that Iran would be able to develop an ICBM before 2015 if it chose to do so.[1] With the missile firings over the past year, they have also demonstrated the ability to conduct coordinated launch operations. But they are not alone.

In 2006 there were about 100 foreign ballistic missile launches around the world. This year to date, the pace of testing is about twice that of last year—a trend reflecting the determination of many countries to acquire these capabilities.

The actions of North Korea and Iran this past year demonstrate the determination of these rogue regimes to achieve this capability and potentially weapons of mass destruction to further aggressive ends. With the proliferation of ballistic missile technology, we expect to be surprised by unexpected and more robust threats. The missile defense development program recognizes that we must stay a step ahead of a dynamic threat.

U.S. BALLISTIC MISSILE DEFENSES—A REPORT CARD

In January 2002, just a little more than 5 short years ago, the Secretary of Defense directed the agency to restructure the missile defense program to deal with the urgency, enormity and complexity of developing, testing and building a missile defense system. This bold initiative required the adoption of an evolutionary acquisition strategy to be executed by a single agency, a strategy that relies on continual assessments of the threat, available technology, and what can be built and fielded to provide a militarily useful capability in an urgent manner.

Having capitalized on our steady progress since the 1980s, the dedicated men and women of the Missile Defense Agency and our industrial partners delivered to the Combatant Commanders in 2004 an initial missile defense capability to defeat the near-term long-range missile threat. Supported by an extensive command, control, battle management and communications (C2BMC) infrastructure, we connected additional system elements to the fire control system and put in place trained system operators, the logistics support infrastructure and support centers required for this limited operational system.

To date, we have made significant, and in many ways, unprecedented strides to deliver a capability where none existed before. Since 2002 we have fielded and completed the initial integration of land- and sea-based interceptors, mobile and fixed sensors and command, control, battle management, and communications suites to deliver one of the most complex and comprehensive defensive capabilities ever envisioned. And we did so while sustaining an aggressive development program that continues to feed new technologies into the system.

Mr. Chairman, the missile defense investments of 4 administrations and 11 congresses are paying off. With the initial deployment of a limited missile defense capability, the era of absolute vulnerability of our country to a long-range missile attack came to a close. This is important, because I believe a capability against even a single reentry vehicle has significant military utility. The modest long-, medium-, and short-range defensive capabilities we have today can help reduce the more immediate threats to our security and enhance our ability to defend our interests abroad.

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[1] Vice Admiral Lowell E. Jacoby, USN, Director, Defense Intelligence Agency, "Current and Projected National Security Threats to the United States," Statement before the Senate Armed Services Committee, 17 March 2005, p. 11.

Long-Range Defenses.—As part of our strategy to protect the United States from ballistic missiles launched from North Korea or Iran, we have emplaced high-performance interceptors in missile fields at two sites and integrated them into the system. The system's Ground-Based Interceptors use hit-to-kill technologies to destroy intermediate- and long-range ballistic missile warheads in space, in the midcourse phase of flight. These are the only weapons we have available today to defeat longer-range threats once they have been launched. With 18 interceptors emplaced today, we plan to increase interceptor inventories at Fort Greely, Alaska and Vandenberg Air Force Base, California up to 24 by the end of this year.

The system today will receive a cue from Defense Support Program satellites or from one of 16 long-range surveillance and track Aegis destroyers that could be stationed near the threat region. These satellites and ships can pass detection or cueing data across communications lines into BMD system communication and battle manager nodes located in Fort Greely and Colorado Springs. Today we stand ready to locate and track threats coming out of East Asia using the Cobra Dane radar in the Aleutians and the upgraded early warning radar at Beale Air Force Base, California.

Powerful X-band radars located on a mobile platform in the Pacific Ocean and at Shariki, Japan can provide precise tracking and discrimination to increase the probability we will destroy any lethal target. A 2006 independent assessment concluded that the Sea-Based X-band radar, which deployed to the Pacific at the end of 2005, is sufficiently rugged to operate in the rough seas of the northern Pacific. These conditions were validated this past winter when the SBX experienced extremely hazardous weather with negligible impact. Also in 2006, we deployed the first forward-based X-band radar to Japan, accelerating its deployment and supporting C2BMC equipment to its operational location in Shariki Japan, achieving partial mission capability in October 2006.

Short- to Medium-Range Defenses.—Since 2004 we have expanded and improved terminal and midcourse defenses to defeat short- and medium-range threats from land and sea. Aegis ships have been periodically put on station in the Sea of Japan to provide long-range surveillance and tracking data to our battle management system. We began fielding Standard Missile-3 interceptors in 2004, evolving to a more capable interceptor. With our growing inventory of Standard Missile-3 interceptors on Aegis ships, we can provide a flexible sea-mobile capability to defeat short- to intermediate-range ballistic missiles in their midcourse phase. In 2005 we upgraded the first Aegis cruisers for the engagement mission. Today we have available three Aegis BMD engagement cruisers and four engagement destroyers.

Having successfully transitioned the Patriot Advanced Capability-3 (PAC–3) to the U.S. Army in March 2003, we continue to maintain configuration control and work with that service to improve and upgrade PAC–3 and Medium Extended Air Defense System (MEADS) performance. Today, PAC–3 fire units are being integrated into the forces of our allies and friends, many of whom face immediate short- and medium-range threats.

Integrating the System.—For the ballistic missile defense system to work effectively, all of its separate elements must be integrated across several Combatant Commands. This capability allows us to mix and match sensors, weapons and command centers to dramatically expand detection and engagement capabilities over what can be achieved by the system's elements operating individually. Combatant Commanders can use the C2BMC infrastructure to enhance planning, synchronize globally dispersed missile defense assets, and manage weapon inventories. These capabilities also can provide our senior government leadership situational awareness of ballistic missile launches and defense activities. Today we have in place a planning capability within U.S. Strategic, Northern, and Pacific Commands.

Supporting the Warfighter.—This past year we continued work with U.S. Strategic Command and other Combatant Commands to train missile defense crews at all echelons, ensuring that they can operate the ballistic missile defense system if called upon to do so. We established a BMD operations watch officer to provide real-time BMD situational awareness, operational status, and coordinate the configuration of the system and have executed a series of exercises, which involve temporarily putting the system in a launch-ready state.

We have set up a process to collaborate with the Combatant Commanders and the military services to define and prioritize requirements as the system evolves. For example, we did not have a sea-based terminal layer planned for the program until the Commander of U.S. Strategic Command identified this as a desired capability. Once this need was identified, we worked with the Navy to define and budget for near- and far-term programs for a sea-based terminal defense. We also have worked closely with the services and the Office of Secretary of Defense on transition and transfer activities to address operations and support of the system elements. The

Deputy Secretary of Defense identified lead military departments for eight elements of the BMDS, and the Navy has just agreed to take on lead service responsibility for the Sea-Based X-Band Radar. We have developed transition and transfer plans with the services and the Combatant Commands. These plans capture both agreements and the roles and responsibilities associated with evolving operations and support activities. This collaboration with the warfighter includes training, testing, wargaming, and conducting exercises and simulations, all of which help demonstrate and improve the capability and reliability of the missile defense system.

BMD System On Alert.—As I stated earlier, when the North Koreans conducted their launches last summer, for the first time in the history of the United States, we had the capability to defend our people against a long-range missile had it been necessary. Working closely with U.S. Strategic Command's Joint Functional Component Commander for Integrated Missile Defense, we successfully took the system out of the development mode and handed it over to the warfighter for operation. This activation of the system last June helped us to refine procedures and taught us invaluable lessons about system operations.

Alert activities included activation of the ground-based midcourse defense and the deployment of a missile defense capability to the Sea of Japan. We had Aegis long-range surveillance and track ships stationed east and west of Japan during the missile firings. Data collected from these sensors would have helped identify whether the long-range launch was a ballistic missile or a space launch vehicle and would have provided tracking data to the system. The C2BMC situational awareness displays were operational and being monitored at the various commands.

We also accelerated the capability of the forward-based X-band radar in Japan for data collection. The Sea-Based X-band radar was stationed off Hawaii and similarly standing by for data collection. At the time, the forward-based radar and the sea-based radar were not integrated into the system. Given these events from last summer and our ability to bring the system on line and prepare it for emergency use, I am very confident that the system would have operated as designed had the Taepo Dong-2 threatened the United States.

We have an operational system today because of the capability-based acquisition approach we have followed since 2002. This approach leverages collaboration with the warfighter community throughout development and testing to the point where we transition or transfer capabilities to the operators. Some have asserted that our non-traditional approach lacks discipline, transparency, and/or accountability. I do not agree. I think the progress we have made to date in fielding a missile defense capability speaks for itself and justifies the continuation of this approach. Had we followed the traditional acquisition approach, we would not have had an operational capability to respond to the potential threat from North Korea. Had we followed the traditional approach, I believe we truly would have "delivered less at a higher cost."

The missile defense program is highly scrutinized by the Department of Defense, the Congressional Budget Office, the Government Accountability Office, and the Congress. In 2004 Congress required the Missile Defense Agency to submit a cost, schedule and performance baseline for each block configuration of the BMDS being fielded. We have complied with this law every year, describing our baseline in terms of 2-year increments of capability called fielding blocks. From an acquisition process perspective, I understand that we are blazing new trails, and the information we provide is therefore different from what people are used to seeing. I understand the onus is on us to clearly convey to Congress that we are fielding ballistic missile defense capability in a responsible and transparent manner, and I am committed to doing that. I have therefore directed my staff to complete a review of our current approach and look at ways to better describe our baseline program.

USE OF PROCUREMENT FUNDS WOULD SET BACK MISSILE DEFENSE PROGRESS

In 2002 the Department of Defense directed the Missile Defense Agency to use research, development, test and evaluation (RDT&E) funding to develop and field a single integrated missile defense system outside the traditional acquisition process. This direction gave MDA the ability to make knowledge-based decisions and incrementally fund system element and component quantities, combinations, and upgrades to support accelerated fielding and keep pace with an evolving, uncertain threat.

The use of RDT&E funds makes possible a development and fielding approach that: provides flexibility to pursue multiple development paths, reducing risk inherent in BMD system engineering by allowing MDA to scale back on less promising efforts; demonstrates what works and what does not; allows for flexible responses to changes in the evolving threat; and facilitates technology-based improvements during development and fielding phases.

The flexibility in the current missile defense program was highly advantageous for the Nation this past summer when the North Koreans launched short-, medium-, and long-range ballistic missiles, making missile defense an urgent matter overnight. If we had used procurement funding at the start of the missile defense program in 2002, we arguably would not have had a system to activate to meet the possible threat to our security this past July. The average major defense acquisition program has a cycle-time of 6 years between Milestone B (program start) and Milestone C (authorization for production). Assuming the BMDS had received Milestone B approval in 2002, MDA would have been seeking Milestone C approval in 2008 before it could begin procurement and fielding of the long-range missile defense system. The traditional acquisition process simply does not accommodate the development and fielding of a complex and military useful ballistic missile defense capability on an urgent timeline.

However, if we were told today to use procurement funds to field BMDS assets rather than incrementally fund them across the fiscal year defense program, as we have done for the last 4 years with congressional support, I think it is important to understand the impacts. Procurement funding would complicate the ability to respond with agility to the evolving threat and limit MDA's ability to implement efficiencies and improvements in the BMD system.

The required use of procurement funding also would narrow significantly the content of program work (decreasing our development options for meeting future threats). For example, MDA would be forced to pay for all current on-going fielding programs in 1 fiscal year or stretch out the fielding of near-term assets over a longer period of time than currently planned. This requirement could add as much as $3.3 billion in additional cost to our projected budget in fiscal year 2009 alone. To pay for this shortfall in one fiscal year, MDA would have to terminate, for all practical purposes, most of its development efforts, eliminating options for future capabilities and compromising the current system engineering and testing processes. The alternative would be to delay current fielding activities of critical assets such as the Ground-Based Interceptors, the Standard Missile-3 and the Terminal High Altitude Area Defense System. And this would only be the start.

Changing the funding approach also would restrict or eliminate the agency's ability to make responsive schedule and funding adjustments, as was done with the flight-test stand-down in early 2005. Another example was the adjustment we made to the Standard Missile-3 missile fielding as a result of design issues associated with the third stage rocket motor and the Divert and Attitude Control System. The ability to make these adjustments allowed the agency to implement key recommendations of the Mission Readiness Task Force that have since put the long-range test program back on track. The restrictions in program flexibility imposed by the use of procurement funding would have greatly limited the agency's ability to accelerate last year's deployment of the forward-based X-band radar to Japan and hindered the actions it took to recover Ground-Based Interceptor and THAAD interceptor production capabilities following the 2003 booster motor plant explosion at a key contractor facility.

I remain committed to working with the Congress to develop a new approach allowing the continued use of RDT&E funding while providing Congress with the information it needs to ensure accountability and oversight.

BUILDING CONFIDENCE THROUGH SPIRAL TESTING

Testing under operationally realistic conditions is an important part of maturing the system. We have been fielding test assets in operational configurations in order to conduct increasingly complex and end-to-end tests of the system. While the BMD system is a developmental system, it is available today to our leadership for activation to meet real world threats. Given this dual function of the test bed, the operational test agencies and the warfighting community are very active in all phases of our test planning, execution, and post-test analysis.

Using criteria established by the agency's system engineers and our warfighters, all system ground and flight tests provide data that we and the operational test community use to verify the system's functionality and operational effectiveness. Our flight tests are increasing in operational realism, limited only by environmental and safety concerns. Each system test builds on the knowledge gained from previous tests and adds increasingly challenging objectives, with the downstream goal of devising scenarios that test elements of the system from end-to-end. This spiral test approach increases knowledge of, and confidence in, the system performance while maintaining safety and minimizing artificiality.

Last year I explained that we had several concerns with quality control and reliability that led to two successive Ground-based Midcourse Defense test aborts, prob-

lems that we have since comprehensively addressed. The independent review team concluded that the deficiencies in systems engineering, ground qualification testing, flight test readiness certification, contractor process control and program scheduling were not systemic and did not compromise initial defensive capabilities. I testified last year that I did not view the failures as major technical setbacks.

Coming off the very successful fly-out of the operational configuration long-range interceptor in December 2005, we conducted a long-range intercept flight test last September that exceeded our objectives. That complex test involved an operationally configured interceptor launched from an operationally configured silo at Vandenberg Air Force Base, operational sensors, and operationally trained crews manning the fire control consoles. The test demonstrated the functionality of the Exo-atmospheric Kill Vehicle and the ability to engage a threat-representative target using the Upgraded Early Warning Radar at Beale Air Force Base in California. After the kill vehicle acquired the target launched out of the Kodiak Launch Complex in Alaska nearly 3,000 km away from the engagement zone, it successfully intercepted it. While it was not hooked into the system, we also demonstrated the powerful contributions the Sea-Based X-band radar can make in the areas of tracking and discrimination. This was our most operationally realistic, end-to-end test of the system involving the Ground-based Midcourse Defense element to date.

Over this past year the Missile Defense Agency conducted more than 35 major tests and successfully met our primary test objectives in 14 out of 15 flight tests. In fact, during a 90-day period last summer, we achieved successful hit-to-kill intercepts in the lower atmosphere with the Patriot Advanced Capability-3, in the upper reaches of the atmosphere with the Terminal High Altitude Area Defense element, and in space with the Aegis Standard Missile-3 and the Ground-Based Midcourse Defense elements. Including tests of the Patriot Advanced Capability-3, we achieved seven hit-to-kill intercepts of ballistic missile targets in eight attempts in 2006. Since 2001, we have built a record of 26 successful hit-to-kill engagements in 34 attempts. Our test plans for 2007 and 2008 will continue to use more complex and realistic scenarios for system-level flight tests.

We plan three more long-range interceptor flight tests by the end of this year that continue to push the edge of the envelope in testing complexity. All tests will continue to use operationally trained crews and the operational launch site at Vandenberg. We plan to integrate the Sea-Based X-band radar into the system for the intercept test in late summer as we continue to expand the number of sensors available to us to cue the system and engage targets.

On June 22 of last year, we successfully used a U.S. Navy Aegis cruiser to engage a separating target carried on a threat-representative medium-range ballistic missile. As we had done in the past three flight tests, we did not notify the operational ship's crew of the target launch time, and they were forced to react to a dynamic situation. The role of the crew is an important part of our ability to engage hostile missiles, and last December we increased test complexity by attempting a simultaneous engagement of aerial and ballistic targets and by using operator-selectable parameters to allow for automatic identification of targets. A crew member changed the ship's doctrine parameters just prior to target launch. This modification prevented the ship's fire control system from conducting the planned ballistic missile and aerial target engagements. The primary target was a very short-range ballistic missile, and thus there was insufficient time for manual engagement. When the Standard Missile-3 interceptor failed to launch, we aborted the launch of the Standard Missile-2 interceptor. This is another example of why we conduct tests—to expose flaws in the system and wring out operational procedures. We are working to resolve the problem we experienced in the test last December and expect to conduct it again this spring.

We plan four more Aegis intercept flight tests in 2007. We will again demonstrate the integration of the Aegis BMD weapon system into the overall BMD system and evaluate the ship crew's performance in executing an operationally realistic BMD mission. Early this summer, we will attempt an intercept of a separating, medium-range target using the Standard Missile-3 Block IA interceptor. Later this year, we will demonstrate the ability to engage two near-simultaneous short-range unitary targets. Also late in 2007, as part of our growing partnership with Japan, a Japanese Maritime Self Defense Force Kongo-class ship will attempt to engage a medium-range ballistic missile separating target using the Block IA Standard Missile-3 interceptor. This will be the first such firing by a maritime ally. In 2008 we will engage a separating intermediate-range ballistic missile target using off-board sensor information to launch the interceptor. We will also attempt a second sea-based intercept test with our Japanese partners.

As I mentioned earlier, flight-testing involving the redesigned Terminal High Altitude Area Defense (THAAD) interceptor continued last July with a successful en-

gagement of a unitary target high in the atmosphere. In September we again sought to demonstrate the performance of the new missile and the ability to integrate it into the BMD system, but we were unable to do so following the failure of the target missile. This past January and earlier this month, we again successfully destroyed short-range targets. These endo-atmospheric engagements were the first such tests of the THAAD interceptor at the Pacific Missile Range Facility. To demonstrate the capability of the THAAD fire unit to intercept at different altitudes in the atmosphere and in low exo-atmosphere, we plan one more intercept test in space later this year against a unitary target. In 2008 we plan to demonstrate interceptor capabilities against more stressing targets. We will conduct two intercept tests involving the THAAD interceptor, one against a separating target in space, and the other against a separating target high in the atmosphere. Further, the first test in 2008 will include the launch of two THAAD interceptors. The Missile Defense Agency will also participate in Patriot combined developmental/operational tests as well as Air Force Glory Trip flight tests.

In 2007 we will continue with our successful ground testing, which involves warfighter personnel and test hardware and software in the integrated system configuration to demonstrate system connectivity and interoperability. Upcoming tests will verify integration of the sea-based, forward-based, and Fylingdales radars. The funds we are requesting will support additional capability demonstrations and readiness demonstrations led by the warfighting community. We currently cannot test and train on the system while it is in full operational mode. To address this problem, we are developing a capability to support continued research, development, test, evaluation, and maintenance while concurrently sustaining operational readiness.

Based on the many tests we have conducted to date, we maintain our confidence in the BMD system's basic design, its hit-to-kill effectiveness, and its inherent operational capability. We continue to work closely with the Director, Operational Test & Evaluation, Operational Test Agencies, and Combatant Commanders to characterize the effectiveness and readiness of the system at every stage in its development and fielding. We are developing the capability to conduct concurrent test, training, and operations, which will allow Combatant Commanders to keep the system in operational mode while we test, train, and make improvements to the system.

BMD SYSTEM FIELDING PLANS

Maintaining and Sustaining the Capability.—The top priority of the Missile Defense Agency is to maintain and sustain the deployed initial capability to stay ahead of the North Korean and Iranian threats. This means improving long-range capabilities for homeland defense and moving forward with initial defenses to protect allies and U.S. interests abroad against shorter-range ballistic missiles.

Our program strategy completes the fielding of ground-based interceptors in Alaska and California. We will begin construction in 2007 of a third missile field at Fort Greely and accelerate delivery of interceptors. We also will begin increasing the number of interceptors available at Vandenberg Air Force Base from two to four. An additional fifth silo at Vandenberg will be dedicated to testing. We will have up to 30 long-range interceptors deployed by the end of 2008. For midcourse capability against the long-range threat, the Ground-based Midcourse Defense element budget request for fiscal year 2008 of about $2.5 billion will cover continued development, ground- and flight-testing, fielding and support.

To address short- to intermediate-range threats, in 2006 we added one Aegis engagement cruiser, for a total of three, and three Aegis engagement destroyers. As we convert destroyers this year to add the engagement capability, the number of long-range surveillance and track (LRS&T) ships will fall from 10 at the end of 2006 to 7 and our total number of fully BMD-capable Aegis engagement ships (cruisers and destroyers) will climb to 10. By the end of 2008, we plan to have delivered 13 Aegis engagement destroyers and 3 engagement cruisers and 40 interceptors to inventory. System tests will involve further demonstrations of the sea-based interceptor, and we will continue enhancing the system's discrimination capability. For fiscal year 2008, we are requesting approximately $1.044 billion to continue Aegis BMD development and testing.

To supplement the Cobra Dane and Beale radars, we will finish the integration work on the Royal Air Force Fylingdales early warning radar in the United Kingdom. It will be fully operational by the end of this year. This radar will provide coverage against Middle East launches against the United States and our allies in Europe. Our fiscal year 2008 budget request for BMD radars is $758 million. These funds will continue forward-based radar integration work and complete construction

of a permanent basing site at Shariki Air Base. We will also have available for deployment a second forward-based X-band radar.

With this year's budget request of $247 million for the C2BMC activity, we will continue to use spiral development to incrementally develop, test, and field hardware and software improvements leading to a robust, net-centric missile defense capability that fights as a system. We have made incredible progress in this area despite decrements in funding over the past couple of years. Our ability to defend against highly lethal threats or operate in a very complex, stressing battle environment spanning multiple theaters requires all missile defense elements, which may be spread over thousands of miles, to work together as a "team." Today we can do that. I am very proud of what our national team for integration has achieved. We will press on with the development of the Global Engagement Manager at the Pacific Air Operations Center and integrate into the system the forward-based radar in Japan, the Sea-Based X-band radar, and the Fylingdales radar. We plan to install additional planning and situational awareness capabilities to facilitate executive decision-making in the European Command and the Central Command by 2009.

Closing Capability Gaps.—Our long-term strategy is to make the system more robust, reliable and flexible in order to close gaps in our missile defense capabilities. In line with our multilayer approach, the missile defense program in fiscal year 2008 and beyond will expand terminal defense protection, upgrade and improve midcourse discrimination and firepower, strengthen the capability of the BMDS to defeat coordinated attacks, and place increasing emphasis on boost phase defenses.

The missile defense program will improve coverage of the United States and, for the first time, extend coverage to Europe against longer-range ballistic missiles by forward-deploying BMD assets to Europe. Currently, our allies in Europe do not have defenses against Iranian medium- and long-range ballistic missiles, and the BMD system currently deployed to counter the North Korean long-range threat is not technically configured to protect cities in Europe. Therefore, a number of allied governments have expressed interest in deploying defenses against this threat. We have agreed with Poland and the Czech Republic to begin focused discussions on the deployment of long-range interceptors and a midcourse discrimination radar. If negotiations are successful, we plan to modify the X-band radar currently located on the Kwajalein Atoll and relocate it to a site in the Czech Republic.

The deployment of this X-band radar in Europe will complement sensor assets deployed in the United Kingdom and Greenland. In addition to increasing the number of long-range interceptors emplaced at missile fields in Alaska and California, we are hopeful that successful completion of negotiations with the government of Poland will allow us to start emplacing 10 two-stage configurations of our flight-proven ground-based interceptors in Poland beginning in 2011. Central Europe provides an optimal location for the interceptors and radar to protect all European countries threatened by threats greater than 1,500 km out of Iran. These missile defense assets would complement and enhance future North Atlantic Treaty Organization missile defense systems. By devaluing Iran's longer-range missile force, European missile defenses could help dissuade the Iranian government from further investing in ballistic missiles and deter it from using those weapons in a conflict.

There has been some discussion that the defense of all of Europe from ballistic missile attack would be more cost-effective if we were to replace the fixed missile field, midcourse radar and forward-deployed radar currently planned for Europe with mobile missile defenses. By our calculations, this is clearly not the case. There are serious drawbacks to planning an architecture of mobile systems in lieu of the currently planned fixed architecture.

First, the current configurations of Aegis BMD and terminal high altitude area defense do not have the ability to counter intercontinental ballistic missiles (ICBMs) without extensive and costly modifications. Likewise, mobile system sensors for Aegis BMD and THAAD cannot provide equivalent radar coverage of Europe. They are designed to be augmented with other sensors, like the European Midcourse Radar, and their interceptors are designed to engage slower short- to medium-range ballistic missiles systems. Without sensor augmentation, Aegis BMD ships, using the SM–3 Block IIA (currently under development and not available until after 2015), would protect approximately only half of Europe against longer-range missiles. Furthermore, the THAAD interceptor would require extensive redesign to be able to intercept long-range threat missiles. Importantly, if these mobile short-range systems achieved an intercept, the intercept would occur in the lower parts of the atmosphere where post-engagement effects, such as chemical, biological, or nuclear weapon fallout and electro-magnetic pulse effects would be of great concern to cities and other civilian areas.

Second, the protection of Europe with mobile systems such as Aegis BMD and THAAD would come at a cost that is more than five times greater to field and sus-

tain when compared to the fixed BMD site plan. It will require 10 Aegis ships on station with SM–3 Block IIA interceptors to provide 40 to 60 percent coverage of Europe (central Europe would not be protected). To provide this persistent partial coverage, it would require four rotations for a total of 40 ships dedicated to the European defense. Assuming 20 interceptors per ship, we would need 200 SM–3 interceptors for the ships on station and 200 SM–3 interceptors for rotation. This mobile system alternative will initially cost $17 billion, with recurring costs around $600 million per year. The command and control infrastructure required to support this mobile alternative would make this approach even more cost-prohibitive. Of note, we did not consider the significant impact on our Aegis ship force levels in this calculation.

The cost for deploying 80 THAAD batteries (the minimum estimate to protect key assets Europe) would be approximately $40 billion with recurring costs at roughly $2.4 billion per year. The cost to field this additional force structure and the need to negotiate with each host nation also makes this option prohibitively expensive and not viable.

I believe our current proposed architecture will provide the best, most cost-effective protection for our European allies, and it can be deployed beginning in 2011. It would protect all European nations threatened by longer-range weapons from Iran. The cost of our European missile defense component proposal of $3.5 billion non-recurring, and $250 million per year to operate and maintain, is far less expensive and more effective than the $16 billion, or more, and the $600 million per year required for a less-effective mobile ballistic missile defense architecture for Europe. The mobile alternative also would not provide any additional protection for the United States.

We also are developing the Multiple Kill Vehicle (MKV) system to upgrade long-range interceptor performance by attaining a volume kill capability to defeat multiple reentry vehicles and midcourse countermeasures. We have restructured the MKV program to develop land- and sea-based interceptor payloads by the middle of next decade. Besides bringing several kill vehicles to the fight, the MKV system will provide critical tracking and discrimination information to other system sensors and interceptors and assist with kill assessment. We have requested $265 million for this work in fiscal year 2008.

This budget submission also continues the upgrade of the Thule early warning radar in Greenland and its integration into the system by 2009. Together with the radars in California, Alaska and the United Kingdom, the Thule radar will ensure full coverage of the United States against threats from the Middle East. We will also continue to enhance additional forward-based X-band radar capabilities in Japan and other operating locations to meet warfighter needs.

We also will bolster defenses against short- to medium-range threats by increasing the inventory of Aegis BMD sea-based interceptors from 86 to 132 by 2013. Upgrades to the Standard Missile-3 include improvement of the Divert and Attitude Control System and discrimination performance. We also will provide a full upgrade of the Aegis BMD weapon system to improve its ability to detect, acquire, and intercept more diverse, longer-range threats. At the end of the decade we will integrate Aegis BMD with the Navy-developed Open Architecture system to remain compatible with Navy ships following modernization.

We will field two, and future plans call for four, Terminal High Altitude Area Defense (THAAD) fire units, which consist of radars and 96 interceptors. THAAD will provide transportable terminal protection for our troops and areas along the U.S. coasts or on the territories of our allies. The first unit will be fielded in 2009, with subsequent units fielded by 2012. We are requesting $858 million in fiscal year 2008 for THAAD development and fielding.

DEVELOPING OPTIONS FOR THE FUTURE

We do, of course, need to address far-term threats. In simplest terms, that means managing a program that balances initial, near-term fielding of system elements with long-term development. I continue to be a firm believer in the balanced program, because it neither compromises our security in the present nor short-changes our future safety. This approach recognizes the urgency of fielding capabilities to address threats we face today and the necessity of continuing support for vigorous development activities to prepare for tomorrow's ballistic missile challenges to our security.

I am in strong agreement with the members of the House Armed Services Committee, who recently concluded that the country's missile defense program "must be

scalable in response to the evolution of the threat."[2] The Missile Defense Agency plans to develop options for incrementally fielding elements of the ballistic missile defense system. We will do this by leveraging a key U.S. strength, our technological advantage, and by building with our allies a foundation of global access and response.

In executing our program we continue to follow a strategy of retaining alternative development paths until capability is proven—a knowledge-based funding approach. That means we are setting specific targets, or knowledge points, that the development efforts have to reach to demonstrate a specific capability.

There are several important development efforts funded in this budget. A significant part of missile defense investment has been devoted to the development of terrestrial boost phase defenses to supplement currently fielded midcourse and terminal defenses. An operational Airborne Laser (ABL) could provide a valuable boost phase defense capability against missiles of all ranges. We restructured the Kinetic Energy Interceptor (KEI) activity to focus on development of a high-acceleration booster, one that is more capable than any booster we currently have in inventory. Either ABL or the Kinetic energy booster will be selected as the primary boost phase program upon completion of critical knowledge points before 2010.

Over the past two years we have demonstrated in ground tests the power and reliability of the ABL high energy lasers. We also have tested the command and control and passive target detection systems in flight. In 2006 we refurbished the high energy laser optics and completed integration and ground testing of the low-power tracking and beacon illuminator lasers. This year we will flight test the beam control and atmospheric compensation lasers against a cooperative airborne target. Earlier this month, we reached an important milestone in this program when we conducted the first in-flight test of the laser targeting system, successfully demonstrating a technology that will help track a boosting ballistic missile and identify the most vulnerable sections on the rocket motor case to be hit by the high energy laser. We recently completed major structural modifications to the Boeing 747 aircraft to support installation of the high energy laser, which will continue in 2008. The $516 million we request in fiscal year 2008 will complete integration of the high energy laser modules with the modified aircraft as we prepare for a lethal shootdown of a ballistic missile target in 2009. Despite the continued technical challenges we face, I remain optimistic that we can produce an operationally effective directed energy capability.

We have made good progress in our high-acceleration booster development effort. This past year we successfully conducted the first static firings of the first and second stage boosters and demonstrated overhead non-imaging data fusion processing within the prototype fire control component. This high acceleration booster also would enhance the performance of the currently deployed ground-based interceptor. Within the restructured program we will maintain options to develop a land-mobile launcher and fire control system as well as an option for a sea-based capability. We are requesting $214 million in fiscal year 2008 for this activity.

We plan to develop space-based sensors to provide a persistent identification and global tracking capability. A small constellation of Space Tracking and Surveillance System (STSS) satellites will enable operation of the missile defense system worldwide, independent of terrestrial-based sensors along the threat trajectory. These sensors will be able to detect and track enemy ballistic missiles and payloads through all phases of flight and close the system fire control loop globally. We are on track to launch two demonstration satellites in November 2007. Next year, following on-orbit check-out, these demonstration satellites will perform live target acquisition, tracking and handover. We are requesting approximately $319 million in fiscal year 2008 to execute the Space Tracking and Surveillance System activity.

We have learned a great deal from the ground-testing of the STSS Block 2006 sensors in representative, thermal vacuum conditions. We have proven that this class of sensor will achieve the necessary sensitivity to support intercepts. Given the long design timelines for space systems, we are requesting funding in fiscal year 2008 to begin work on the follow-on constellation. Postponing the start of this phase of the program will delay our ability to achieve a necessary global sensor and fire control capability.

This month we are launching a satellite, the Near Field Infrared Experiment (NFIRE), to collect high resolution infrared phenomenology data from boosting targets. Following preparation of the satellite once it is on-orbit, in August and October 2007, we will conduct tests using live ballistic missile targets. The data from NFIRE will be fed into simulation models and contribute to future sensor designs.

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[2] House Armed Services Committee, *Committee Defense Review Report*, December 2006, p. 104.

We will continue work with Japan to increase Standard Missile-3 range and lethality. The development of the 21-inch Standard Missile-3 Block IIA interceptor will increase our capability to engage longer-range ballistic missiles from Aegis BMD platforms and help close a capability gap around 2015. We have requested $74 million in fiscal year 2008 as part of our cooperative work with Japan to purchase long-lead items required for the development of this interceptor.

Another capability gap exists in terminal defense against short- and medium-range ballistic missiles. For the past 2 years, the Navy and the Missile Defense Agency (MDA) have collaborated on plans for a sea-based terminal defensive layer. In May 2006 we demonstrated the feasibility of developing a limited near-term capability against a short-range ballistic missile using a modified Standard Missile-2 Block IV interceptor. Based on this demonstration, we are upgrading the Aegis weapon system, and the Navy is upgrading the SM–2 Block IV missile, the goal being to install a terminal engagement capability on 18 Aegis BMD ships beginning in 2009. We also are examining with the Navy options for developing a far-term improved capability to address short- and medium-range threats. Our fiscal year 2008 request for sea-based terminal development work is $75 million.

The next generation of C2BMC capability will be essential if we are to close gaps in our command seams. As we deliver more sensor and interceptor capability into the hands of the warfighters, they are faced with several more options to defend their areas of responsibility. We must continually refine our C2BMC capability to allow the warfighters to rapidly process all of the available options, plan for the employment of BMDS assets, and globally manage the execution of the system on tight timelines. The battlefield effect is that the integrated BMD system can defend against more missiles simultaneously, reduce risk of missiles leaking through our defenses, conserve more interceptor inventory, and defend a larger area.

Finally, I am deeply concerned about future threat uncertainty and worldwide ballistic missile proliferation. I believe the performance of the BMD system could be greatly enhanced by an integrated, space-based layer. Space systems could provide on-demand, near global access to ballistic missile threats, minimizing the limitations imposed by geography, absence of strategic warning, and the politics of international basing rights. A space layer would apply pressure on launches from land or sea, depriving the adversary of free rides into midcourse with advanced countermeasures. While deployment of such a system must be preceded by significant, national-level debate, that debate must be informed by science. To that end, we are ready to begin a focused investigation of the feasibility of having an integrated space-based layer, and I am requesting $10 million for fiscal year 2008 to begin concept analysis and preparation for small-scale experiments. These experiments will provide real data to answer a number of technical questions and help the leadership make a more informed decision about adding this capability.

We have had to restructure some development activities and cancel others as a result of congressional and departmental reductions in the Missile Defense Agency budget. The following program activities have been delayed: delivery of the first operational STSS satellite has slipped from 2012 to the 2016–2017 timeframe, prolonging the time we will be without a capability to integrate the system globally; and the scope of the KEI activity has been reduced to focus on booster development and delay work on system integration, battle management, and fire control. The reductions also have impacted work in the area of innovative technology development. I regret that we have had to cancel the advanced technology development work associated with our micro-satellite activities and eliminate funding for the High Altitude Airship beyond fiscal year 2007.

INTERNATIONAL PARTICIPATION

The global nature of the threat requires that we work closely with our allies and friends to develop, field, and operate missile defenses. I am pleased to report that many governments share our vision for missile defense. This past year we continued to build on a very successful program to involve more countries and forge international partnerships. Without the participation of our allies and friends, the ballistic missile defense system would look very different.

The government of Japan remains solidly behind missile defense and has even accelerated its program to field multilayered missile defenses that are interoperable with the U.S. system. Japan continues to upgrade its Aegis destroyers and acquire Standard Missile-3 interceptors. In March 2006 we successfully flight-tested new nosecone technologies developed in cooperation with Japan. Additionally, the Missile Defense Agency and Japan have agreed to co-develop a Block IIA version of the Standard Missile-3, which will improve our defensive capabilities against longer-range missiles. Japan also is upgrading its Patriot fire units with Patriot Advanced

Capability-3 missiles and improved ground support equipment. In 2008 Japan is expected to begin co-production of the PAC–3 missile.

The upgraded Royal Air Force Fylingdales radar in the United Kingdom will undergo operational testing this year. Once we certify the radar, it will provide the system critical early warning, tracking and cuing data needed to defeat threat missiles coming out of Iran. We are working closely with Denmark to upgrade the Thule early warning radar in Greenland to improve its capability to detect and track ballistic missiles.

Later this year we will conduct satellite-to-ground and satellite-to-satellite communication experiments with a German-built Laser communications terminal installed in the NFIRE satellite. Together with an identical terminal on a German satellite, the United States and Germany will perform joint experiments to validate the use of laser technology for high speed space communications.

The United States and The Netherlands have been working together to modify Dutch frigates with a combat system to enable ballistic missile detection and tracking. An upgraded air command and defense frigate from The Netherlands successfully detected and tracked the targets in the December 2006 Aegis ballistic missile defense flight test.

We are continuing work with Israel to implement the Arrow System Improvement Program and enhance its capability to defeat longer-range ballistic missile threats emerging in Iran. We are also conducting a feasibility study on a joint development program called David's Sling for shorter-range missile defense.

We continue to support our North Atlantic Treaty Organization (NATO) partners in advancing the dialogue on the political-military implications of defending European population centers against longer-range missile threats. The Missile Defense Agency is supporting the NATO Active Layered Tactical Ballistic Missile Defense Program Office to develop a capability to protect deployed forces by 2010.

I am also pleased to announce that this past February we put in place a Framework Memorandum of Agreement with Italy and we can now begin to develop opportunities for missile defense technology sharing, analysis, and other forms of collaboration. We have other international interoperability and technical cooperation projects underway, for example with Australia, and are working to establish formal agreements with other governments.

CLOSING

Mr. Chairman, in closing, some have said that the Defense Department's investments in missile defense are misdirected, that other threats are more pressing. Others have said we are spending too much money on missile defense and that it is too expensive. And still others have claimed that we should slow down fielding activities until the technologies are more mature.

I disagree with these critics, Mr. Chairman. We must meet the rising threats posed by ballistic missiles. We have seen rogue nations test these weapons in the past year. Ballistic missile defense is expensive, but the dollar investment in this Nation's security pales in comparison to the overwhelming price this Nation would pay in lives, social dislocation, and economic devastation from a single missile impacting an American metropolitan area. Indeed, the success we have seen in our comprehensive test program indicates that there is no reason to slow down.

In less than 3 short years, thanks to the dedication of thousands of men and women across this country and a first-class, cutting-edge defense industry, we have deployed missile defenses to protect our homeland, our troops deployed to dangerous regions around the world, and our allies and friends. But we have a long way to go. So now is not the time to cut back missile defense. Now is the time to accelerate it.

Thank you and I look forward to your questions.

Senator INOUYE. Now may I recognize General Campbell.

STATEMENT OF LIEUTENANT GENERAL KEVIN T. CAMPBELL, COMMANDING GENERAL, U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND/U.S. ARMY FORCES STRATEGIC COMMAND AND JOINT FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

General CAMPBELL. Chairman Inouye, Senator Stevens, members of the subcommittee, thank you for your support and invitation to appear. I want to briefly address my role as the Joint Functional Component Command (JFCC) for Integrated Missile Defense Com-

mand. I'll give you a quick assessment of the capabilities to meet the threat. I'll talk briefly about the role of the warfighter in the development process and our ability to shape what General Obering is producing and last, my role as the Army Senior Commander for Space and Missile Defense.

Senator INOUYE. General, could you pull that microphone toward you, please?

ARMY SPACE AND MISSILE DEFENSE COMMAND COMMANDER'S ROLE

General CAMPBELL. Yes, sir. In my role as the Joint Component Commander for Integrated Missile Defense, we're responsible for planning, integrating, and coordinating missile defense across the combatant commanders. To translate this, this means that we develop concept plans and that we create exercises for exercising the system across all of the combatant commanders.

Last year when the North Koreans conducted their ballistic missile test, I think this did a number of things for us in our ability to operate the system. We demonstrated that we could operate the system on a sustained basis and that we could, across several combatant commanders, dynamically plan, integrate, and coordinate the missile defense system.

I really think the success that we enjoyed was a result of the Missile Defense Agency test program and our involvement in it and also the warfighter exercises that we've put together over the past few years that allowed us to exercise our concepts and our tactics techniques and procedures and it certainly improved our ability to operate the system.

In terms of an assessment of the near-term missile defense forces, I think it is limited. However, the limitation is usually related to missile inventory. I think there is also a requirement for additional systems as well as sensors. And I think with the fielding of THAAD in the near future and the addition of aegis ballistic missile defense capability, we're going to overcome those limitations that we face today.

In my view, the expansion of the system into Europe is an important step that expands not only defense of our friends, allies and our deployed forces but also thickens the defense over the United States. So in my view, this is an essential step in the development of the program.

I really don't think we can do global missile defense without our allies. We're going to need their involvement every step of the way. Along the path into the future, I think it's important that we maintain a balanced program in our ability to address the ICBMs as well as the shorter-range ballistic missiles.

In terms of our ability to shape the future system and what General Obering produces, we have a mature process that involves all of the combatant commanders and we present General Obering with a prioritized list each year of what we think should be introduced into the system in his block development program. This has been successful. I think there is great cooperation amongst the combatant commanders and General Obering and producing what the warfighter needs.

As the Army's Senior Commander for Space and Missile Defense, our job is to ensure that the warfighters have the tactical systems

to delete the short-range threats and deliver space capability to them. We're transforming those forces. We're integrating them into a net centric environment so that these forces are more tailorable and scaleable for combatant commanders to meet their needs. Systems such as Patriot, the elevated netted sensor, and the surface launched advanced air-to-air missile in THAAD are the type of systems that we're networking together.

With the help of this subcommittee, I think we're going to continue to make good progress into the future, especially progress in defending forward-based forces and allies. I appreciate the opportunity to speak to you on these important matters and look forward to your questions. Thank you.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL KEVIN T. CAMPBELL

INTRODUCTION

Chairman Inouye, Ranking Member Stevens, and Members of the Committee, thank you for your ongoing support of our military and for the opportunity to appear before this panel. In my view, this Committee is a strong ally of the Army and the missile defense community, particularly in our continuing efforts to field missile defense forces for the Nation and our allies. I consider it a privilege to be counted in the ranks with my fellow witnesses as an advocate for a strong global missile defense capability.

My current responsibility entails two roles. The first is as the Army's senior commander for space and missile defense. The second role is as a Soldier on the Joint Missile Defense Team and Commander of the Joint Functional Component Command for Integrated Missile Defense, a part of the U.S. Strategic Command. In this role, I serve as the Joint user representative working closely with the Missile Defense Agency (MDA), other services, and Combatant Commanders to ensure that our national goals of developing, testing, and deploying an integrated missile defense system are met in an operationally sound configuration.

Chairman, as proven during last year's July 4th North Korean missile launches, Army Soldiers are trained and ready to operate the Ground-Based Midcourse Defense (GMD) Element of the Ballistic Missile Defense System (BMDS) at Fort Greely, Alaska, and the Joint National Integration Center at Schriever Air Force Base in Colorado. These Soldiers, as part of the Joint team, continue to serve as our Nation's first line of defense against a rogue nation's launch of an intercontinental ballistic missile toward our shores. I am proud to represent them along with the other members of the Army and Joint integrated missile defense community.

UNITED STATES STRATEGIC COMMAND JFCC–IMD

The Joint Functional Component Command for Integrated Missile Defense (JFCC–IMD) was established in January 2005 as one element of the U.S. Strategic Command (USSTRATCOM) and reached full operational capability early in 2006. The JFCC–IMD is manned by Army, Navy, Air Force, Marine Corps, and civilian personnel. This joint-manning arrangement and our strong partnership with our collocated MDA team enable us to execute the integrated missile defense mission by leveraging the existing robust infrastructure.

USSTRATCOM, through the JFCC–IMD, continues to aggressively execute its mission to globally plan, integrate, and coordinate missile defense operations. Through stressing operational scenarios, integrated missile defense has experienced robust growth and maturity and has improved its ability to defend this nation. Although, there is much work yet to be done, JFCC–IMD continues to lead the Department's transformation toward more robust integrated missile defense capabilities. The Soldiers, sailors, airmen, Marines, and civilians of this Joint warfighting organization execute our mission to plan, integrate, and coordinate global missile defense operations and support by operationalizing new capabilities from MDA, developing global missile defense plans in collaboration with the Geographical Combatant Commanders, and conducting cross-geographical combatant commander exercises to eliminate seams and gaps to maintain a strong defense against changing threats. Execution of the essential mission includes providing warning of missile attack to other Combatant Commanders and providing assessment of missile attack.

In all, JFCC–IMD continues to build operational competence of the integrated missile defense capability and warfighter confidence in executing our mission.

Ballistic Missile Defense System Progress

This past year has been a year of operational achievement for integrated missile defense as we successfully placed the Ballistic Missile Defense System (BMDS) on alert in response to a credible ballistic missile threat from North Korea. This limited defense capability marked the beginning of global missile defense as warfighters from three combatant commands and allies integrated respective assets and personnel toward a single mission against a common threat. The scale of this integration is unprecedented—non-missile defense assets were integrated with legacy and state-of-the-art technologies to provide a shield to protect our homeland. Additionally, we achieved unparalleled integration of the Department's intelligence capabilities to enable timely and responsive indications and warning to support missile defense readiness. We expect the warfighting capability provided by such integration of assets, platforms, doctrine, and personnel to continue to grow in coming years.

The North Korean incident last summer also underscored the growing maturity of the cross-JFCC integration within USSTRATCOM in executing its global mission. JFCC–IMD collaborated closely with the JFCCs for Intelligence, Surveillance and Reconnaissance (JFCC–ISR) and Space (JFCC-Space) to integrate the intelligence, surveillance, reconnaissance, and space assets for the missile defense missions. This effort afforded the use of intelligence, surveillance, reconnaissance, and space assets that previously had not been included in the missile defense mission. Similarly, JFCC–IMD collaborated closely with JTF-Global Network Operations to maximize availability of a robust communication network to link the decision-makers in Washington with commanders across the globe. We have also integrated our planning efforts with the JFCC for Global Strike and Integration (JFCC–GSI) to ensure we integrated both offensive and defensive capabilities into potential courses of action. Our approach today for a missile defense contingency is designed to examine and integrate a broader array of capabilities into our planning and execution. In short, JFCCs are maturing in a deliberate and coordinated pace to extend the New Triad in its global mission.

JFCC–IMD's readiness demonstrated during last summer's incident is a testimony to the robust warfighter exercise and test program. During the past year, we planned and conducted three major combatant command-level exercises involving U.S. Pacific Command, U.S. Northern Command and U.S. Strategic Command. These exercises enabled combatant commanders to exercise concepts of operations and tactics, techniques, and procedures, and improve our planning and execution of missile defense operations. These activities enhance warfighter competence in prosecuting a global missile defense capability. JFCC–IMD's global missile defense exercise program also extended to our coalition partners. These international exercises further bolstered our allies' resolve in conducting combined missile defense operations and extending partnership into co-development of future capabilities.

Warfighter Contributions to System Development

Warfighters participate in key BMDS tests to build confidence in its capabilities. JFCC–IMD led warfighter participation in the first distributed ground tests on the operational BMDS, geographically distributed from Colorado to Alaska, and Washington to Japan. This test demonstrated the growing sophistication and complexity of BMDS assessments that are increasingly operationally relevant. Furthermore, warfighters collaborated with MDA to successfully conduct key flight tests to bolster our Nation's confidence in the effectiveness of the integrated missile defense capabilities.

Within a 90-day period, we successfully intercepted ballistic missiles at low and high altitudes; in midcourse and terminal phases; and, in endo- and exo-atmospheric environments with the PATRIOT Advanced Capability-3 (PAC–3), the AEGIS Standard Missile-3, the Terminal High Altitude Area Defense (THAAD), and our long-range Ground-Based Interceptor. Conducting these system-level flight and ground tests required the use of operational assets, the very assets that would be used to defend this nation against a possible North Korea missile attack. JFCC–IMD worked closely with the Combatant Commanders and MDA to coordinate the availability of these assets to ensure sustained operational readiness during the conduct of the system-level tests.

The JFCC–IMD was able to balance the requirements of both operations and tests, but this period of robust achievements underscored the warfighter's requirement to expedite development and deployment of a concurrent testing, training, and operations capability. Concurrent test, training and operations will permit developers and operators to maintain full operational mode of the BMDS while simulta-

neously developing, testing, or training on the system. The need for the concurrent test, training and operations capability is especially pronounced for the one-of-a-kind assets that are shared between the warfighter, developer, and trainer communities.

Absent a mature concurrent test, training and operations capability, JFCC–IMD aggressively conducts an asset management process to ensure the highest level of operational readiness during conduct of materiel development and tests. Supported by an indications and warning system, the asset management process has been the key enabler to operationalize new capabilities, perform operationally relevant tests, and conduct system-wide upgrades. During the past year, the asset management process facilitated warfighters and materiel developers in optimizing the use of the deployed elements while fielding additional assets. In addition, warfighter participation in the flight and ground testing increased our confidence in the system's performance.

Increasing the Capability of the System

JFCC–IMD, in partnership with MDA and the Services, has integrated additional missile defense sensors and shooters to enhance theater and strategic mission capabilities. We have increased the robustness of our sensor capability by deploying a mobile sensor in Japan, increasing the number of AEGIS ships enabled with the long range search and tracking capability, and are deploying a midcourse discrimination sensor in the waters of Alaska. We have continued deployment of the Navy's Ballistic Missile Defense AEGIS Standard Missile-3, PATRIOT Advanced Capability-3 missiles, and increased the number of Ground-Based Interceptors. Additionally, in my role as the JFCC–IMD Commander, I have been in discussion with European Command to build a stronger partnership with our Allies and to host a midcourse radar and interceptor site to counter the Iranian threat.

The Command, Control, Battle Management, and Communications System is an essential evolutionary component of the BMDS that greatly enhances both planning and execution capabilities. The command and control system contributes to all phases of integrated missile defense from optimizing planning to synchronizing the automated execution of the BMDS. During the past year, upgrades to the command and control system have extended situational awareness, planning, and sensor management capability to key components of US Strategic Command, U.S. Northern Command, and U.S. Pacific Command. Additionally, critical command and control system situational awareness nodes are utilized by the White House, National Military Command Center, and Secretary of Defense Executive Support Center.

As we move forward in the next year, much work remains to be done. We will continue to integrate and conduct cross-geographic combatant commander planning and exercises, deploy new capabilities, and increase allies' involvement in global missile defense. We will continue to advocate for system improvements that close capability gaps and improve system performance. Fielding more capable command and control systems, sensors, and kill vehicles, such as the Multiple Kill Vehicle, will provide the warfighter with a system capable of addressing a broad range of threats. Our continuing goal is to develop a seamless missile defense system, that integrates all available capabilities, to deter and dissuade the proliferation of missile threats, and if necessary, defeat them to protect our Nation, deployed forces, friends, and allies.

AIR AND MISSILE DEFENSE—AN OVERVIEW OF THE FISCAL YEAR 2008 ARMY BUDGET SUBMISSION

In addition to deploying the BMDS, MDA, the Services, and the Combatant Commanders continue to focus on improving theater air and missile defense capabilities. Both the Ground-Based Midcourse Defense and Theater Air and Missile Defense Systems are vital for the protection of our homeland, deployed forces, friends, and allies. Air and missile defense is a key component in support of the Army's core competency of providing relevant and ready land power to Combatant Commanders.

As you are aware, real world events over the past year have increased the relevance, urgency, and importance of theater air and missile defense as well as cruise missile defense. Medium and short-range ballistic missile and cruise missile threats continue to grow, especially in light of increased proliferation of missile defense technology. These threats, combined with Iran's and North Korea's increased interest in nuclear capabilities, are of particular concern.

As highlighted in the 2006 Quadrennial Defense Review, a number of potentially hostile states possess or seek weapons of mass destruction. This is especially troubling when considered along with ballistic and cruise missile proliferation. For these states, weapons of mass destruction—particularly nuclear weapons—provide the means to assert regional domination and intimidate others. As such, the Quadren-

nial Defense Review specifically highlighted the need for integrated defenses against short-, intermediate-, and intercontinental-range ballistic and cruise missile systems.

The House Armed Services Committee Defense Review Report, released in December of 2006, concluded that the U.S. force structure must expand and U.S. capabilities must improve to reduce the risk to the security of the American people to an acceptable level and noted that a robust BMDS is critical to defeat strategic threats to the United States and its allies. The report also noted that Operation Enduring Freedom and Operation Iraqi Freedom are consuming key missile defense capabilities, leaving other worldwide commitments under-resourced.

In light of these reports and their findings, the Army, in concert with the Department of Defense and MDA, is taking the necessary steps to ensure that the U.S. homeland, allies and deployed forces are provided the necessary protection from these threats. With that as a background, I would now like to focus on the Army's fiscal year 2008 budget submission for air and missile defense systems. The President's Budget, presented to Congress on February 5th, includes approximately $1.75 billion with which the Army proposes to execute current Army air and missile defense responsibilities and focus on future development and enhancements of both terminal phase and short-range air and missile defense systems. In short, the Army is continuing major efforts to improve the ability to provide warning, acquire, track, intercept, and destroy theater air and missile threats.

The Army, as part of the Joint team, continues its transformation of air and missile defense forces to meet the increasingly sophisticated and asymmetric threat environment encountered by the Joint and Allied warfighter. The air and missile defense force will meet this threat by adhering to the following imperatives: One seamless integrated force; advanced engagement concepts; defense in depth; 360-degree defense; early and continuous engagements; assure friendly use of airspace; and support information dominance.

Integrated Air and Missile Defense

In order to fulfill these imperatives, the Army is transforming its air defense force from its current separate systems architecture to a component-based, network-centric, Integrated Air and Missile Defense system of systems. The Integrated Air and Missile Defense Program focuses on systems integration, common battle command and control, joint enabling networking, and logistics and training to ensure operational requirements, such as force lethality, survivability, transportability and maneuverability, are achieved. Benefits of developing and fielding such a capability include: Expanded defended areas against the full-spectrum of threats; integrated defense design which eliminates single nodes of failure; flexibility in choice of interceptors; ability to battle manage weapons, sensors, and inventories; seamless training adjustments for battle managers across the Integrated Air and Missile Defense Force; and closing current capability gaps.

The Integrated Air and Missile Defense Program employs an evolutionary acquisition strategy that leads to the objective net-centric system of systems plug-and-fight capability. The approach calls for a restructuring of current Army air and missile defense systems into components of sensors, weapons, and battle management command, control, communications, computers, and intelligence with a standard set of interfaces among the components using a standardized communications network. This modularization of missile defense capabilities will allow Joint Forces Commanders to scale and tailor assets and forces based upon the specific operating environment in which they are employed.

Technology insertions to the Integrated Air and Missile Defense will continue throughout each increment as high-payoff technologies mature and are ready for integration. Incremental development of the program allows the Army to more quickly field new and improved capabilities to the warfighter. The proposed fiscal year 2008 President's Budget supports the evolution of an Integrated Air and Missile Defense capability.

Air and Missile Defense Organizational Structure

As part of air defense transformation, the Army has created composite air and missile defense battalions. These battalions address capability gaps, permitting us to defeat cruise missiles and unmanned aerial vehicles while maintaining our ability to defend critical assets from the ballistic missile threat. Composite air and missile defense battalions will capitalize on the synergies of two previously separate disciplines: short-range air defense and high-to-medium altitude air defense. Additionally, the Army no longer provides an organic air defense artillery battalion to its Divisions. Instead, divisional air defense artillery battalions are pooled at the theater-level to provide air and missile defense protection based on situation and mis-

sion requirement. The pool of Army air and missile defense resources will address operational requirements in a tailored and timely manner. This pooling concept supports the Army's effort to move to modular designs that allow force tailoring of units better sized to meet the Combatant Commanders' needs and homeland security and defense requirements.

Within the context just provided, allow me to briefly discuss the three main component areas of the Army's air and missile defense construct: Terminal Phase Ballistic Missile Defense, Cruise Missile Defense, and Force Protection.

TERMINAL PHASE BALLISTIC MISSILE DEFENSES

The PATRIOT/Medium Extended Air Defense System (MEADS) capability is designed to counter theater ballistic missile threats in their terminal phase in addition to cruise missiles and other air-breathing threats. Combining these systems with the Terminal High Attitude Area Defense System capability being developed by MDA with a planned fielding in fiscal year 2009, brings an unprecedented level of protection against missile attacks to deployed U.S. forces, friends, and allies well into the future.

PATRIOT/PAC 3 Overview

Chairman, since the combat debut of the PATRIOT Air and Missile Defense System during Operation Desert Storm, the Army has continued to implement a series of improvements to address the lessons learned. During Operation Iraqi Freedom, we saw the debut of the improved PATRIOT Configuration-3 system, including the effective use of the Guidance Enhanced Missile and the PATRIOT Advanced Capability 3 (PAC–3) Missile. PAC–3 is the latest evolution of the phased materiel improvement program to PATRIOT. Combining developmental testing and operational data, this program enables the development and deployment of a new high-velocity, hit-to-kill, surface-to-air missile with the range, accuracy, and lethality necessary to effectively intercept and destroy more sophisticated ballistic missile threats. Today's PATRIOT force is a mixture of PAC–2 and PAC–3 configured units. To maximize the full advantage of the PAC–3 capabilities, the Chief of Staff of the Army has directed the Army to pure-fleet the entire PATRIOT force to the PAC–3 configuration. In response to Combatant Commanders' requirements, the Vice Chief of Staff of the Army directed the creation of two additional Patriot battalions to help relieve the stress on the PATRIOT force and increase the Army's strategic responsiveness in the area of terminal ballistic missile defense. These directives underscore the importance of PATRIOT to the nation's overall National Military Strategy and are necessary to maximize the capabilities for protecting the security interests of both the United States and our allies.

While PATRIOT saved many lives defending against Iraqi ballistic missile attacks during Operation Iraqi Freedom, there were some operational deficiencies. The Army has undertaken steps to correct them and address lessons learned. The Army has pursued two thrusts—identification and execution of a $41.6 million program for nine specific Operation Iraqi Freedom fixes and continued aggressive participation in Joint interoperability improvements in situational awareness. The development, testing and materiel release for the nine enhancements is on schedule to be completed by the end of this fiscal year. Several enhancements have already completed fielding. The remaining enhancements are either currently being fielded or are planned to start this spring. Based on the current fielding schedule, all remaining Operation Iraqi Freedom fixes will complete fielding to the units by fiscal year 2009.

The PATRIOT system remains the Army's mainstay Terminal Air and Missile Defense System and our Nation's only deployed land-based short-to-medium range BMDS capability. The current PATRIOT force must be sustained and recapitalized until MEADS is completely fielded. Fielding of MEADS is scheduled to begin in 2015 and be completed by 2028.

Combined PATRIOT/MEADS Approach

With the approval of the Defense Acquisition Executive, the Army embarked on a path that merged the PATRIOT and MEADS programs, establishing the PATRIOT/MEADS Combined Aggregate Program with the objective of achieving the MEADS capability through incremental fielding of MEADS major end items into PATRIOT. PATRIOT/MEADS Combined Aggregate Program is an important capability that will operate within the BMDS. It is, in fact, a top Army priority system for defense against short- and medium-range tactical ballistic missiles and air breathing threats. The PATRIOT/MEADS Combined Aggregate Program will be an integral part of the Integrated Air and Missile Defense System of Systems and capable of operating within a Joint, interagency, intergovernmental, and multinational

interdependent operational environment. It will provide wide-area protection at strategic, operational, and tactical levels.

The PATRIOT/MEADS Combined Aggregate Program will also provide battle management command and control in accordance with the IAMD provided common battle command system, introduce lightweight deployable launchers, upgrade the PAC–3 missile, and eventually provide the full MEADS capability to the entire force. By establishing the PATRIOT/MEADS Combined Aggregate Program, the Joint integrated air and missile defense architecture will become more robust in key ways. First, MEADS enhancements are integrated into the existing system. Second, as lessons are learned from the present missile defense capability, they will be incorporated into the MEADS follow-on system.

MEADS is a cooperative development program with Germany and Italy to field an enhanced ground-mobile air and missile defense capability. The MEADS program, which supports the President's goal for international cooperation in missile defense, will enable the joint integrated air and missile defense community to operate more effectively on future battlefields. MEADS will provide theater level defense of critical assets and continuous protection of a rapidly advancing maneuver force as part of the Joint integrated air and missile defense architecture. Major MEADS enhancements include 360-degree sensor coverage and a strategically deployable and tactically mobile air and missile defense system that can be deployed and controlled as part of the integrated air and missile defense architecture. The PAC–3 Missile Segment Enhancement is currently under development and will be integrated into the MEADS program. The Missile Segment Enhancement Missile will provide a more agile and lethal interceptor that increases the engagement envelope. We are confident that this path will provide our service members, allies, friends, and our Nation with the most capable air and missile defense system possible.

Terminal High Attitude Area Defense System Overview (THAAD)

The Department of Defense is committed to fielding an advanced capability to defend against tactical ballistic missiles as soon as possible. THAAD is designed to provide critical defense against short and medium range ballistic missiles. As a result, MDA is funding and manufacturing four THAAD fire units for the Army in an accelerated fielding that will begin in 2009. This investment represents an initial THAAD capability for the warfighter and the next major step towards a comprehensive, layered theater ballistic missile defense. Follow-on THAAD upgrades are planned in future budgets to meet an ever increasing and evolving threat.

CRUISE MISSILE DEFENSE

In the world today, there exists a real and growing threat from land attack cruise missiles. Cruise missiles are inherently very difficult targets to detect, engage, and destroy because of their small size, low detection signature, and low altitude flight characteristics. When armed with a weapon of mass destruction warhead, the effects from a cruise missile could be catastrophic. The Army's Cruise Missile Defense Program is an integral piece of the Joint cruise missile defense architecture. Critical Army components of the Joint cruise missile defense architecture are provided by the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), the Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), the Patriot Missile Segment Enhancement Missile, and an integrated fire control capability inherent in the Integrated Air and Missile Defense System of Systems. We are also working closely with the Joint community to assure development of doctrine that synchronizes our military's full capabilities against the cruise missile threat.

The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System brings a critically needed capability to detect, track, and identify cruise missile threats. The system will support engagements using the Surface-Launched Advanced Medium Range Air-to-Air Missile, the Navy Standard Missile, and the PATRIOT/MEADS weapon systems by providing precision tracking and 360-degree wide-area and over-the-horizon surveillance of land-attack cruise missiles. The Surface-Launched Advanced Medium Range Air-to-Air Missile will provide maneuver forces with a critical, beyond line-of-sight engagement capability to counter the cruise missile threat, as well as unmanned aerial vehicle threats, over an extended battlespace. The Surface-Launched Advanced Medium Range Air-to-Air Missile uses the existing Joint Advanced Medium Range Air-to-Air Missile currently used by the Air Force and the Navy, thereby capitalizing on Joint commonality on the battlefield.

FORCE PROTECTION

A significant danger in Operation Iraqi Freedom and Operation Enduring Freedom is posed by insurgents employing indirect-fire tactics of quick-attack, low-trajectory, urban-terrain-masked rocket, artillery, and mortar strikes against U.S. forward operating bases in Iraq. To combat this threat, the Army developed Counter-Rocket, Artillery, Mortar (CRAM), an integrated solution of capabilities to provide warning and intercept of rocket, artillery, and mortar threats. CRAM provides a holistic approach to this emerging menace. Horizontal integration across the core functions—command and control, shape, sense, warn, intercept, respond and protect—is providing an integrated modular and scalable capability. This capability provides timely warning of mortar attacks, intercept and defeat of incoming rounds, and accurate location of insurgent mortar crews, enabling a rapid, lethal response. CRAM takes advantage of existing systems and capabilities, combining them in a system of systems architecture to support the warfighter on today's battlefield. The current CRAM solution is truly Joint, in that it uses fielded systems from the Army, Navy and Air Force along with a commercial-off-the-shelf system. To date, CRAM has been supported solely through supplemental appropriations. Recognizing the enduring nature of the rocket, artillery, and mortar threat, the Army is exploring ways, to include the use of directed energy, to enhance this capability across all of the core functions, thereby making it even more relevant to the future modular force.

CONCLUSION

Chairman, the Army, a fully contributing member of the Joint team, is relevant and ready, fighting the war on terrorism, and deterring aggression throughout the world, while transforming to meet future threats. With its responsibilities for Ground-Based Midcourse Defense, THAAD, and PAC–3/MEADS Combined Aggregate Program, the Army is an integral part of the Joint team to develop and field an integrated missile defense for our Nation, deployed forces, friends, and allies. In my role as the Joint Functional Component Commander for Integrated Missile Defense, I will continue the development of a Joint BMDS capability to protect our Nation, deployed forces, friends, and allies. The Army has stepped up to the land-attack cruise missile defense challenge by aggressively developing the Joint, integrated, and networked sensor-to-shooter architecture necessary to defeat the emerging threat. The fiscal year 2008 budget proposal continues the transformation of the Army's air, space, and missile defense force to support the Army's future force, the Joint Integrated Air and Missile Defense System, and our global BMDS. Transformation will continue to define the characteristics of the emerging air, space, and missile defense force and determine how it can best support the future force operating in a Joint, interagency, intergovernmental, and multinational environment.

I appreciate having the opportunity to speak on these important matters and look forward to addressing any questions you or the other Committee members may have.

Senator INOUYE. Well, thank you very much. Senator Stevens.

STATUS OF GROUND-BASED MIDCOURSE DEFENSE

Senator STEVENS. Thank you very much. You know, I really think we should add to our congratulations to both of you. Because this system is going forward so successfully, I think the problem is how to handle success. But we have a test of the ground-based midcourse defense (GMD) program. As I understand it, you have one scheduled in May and September. Any obstacles to those tests?

General OBERING. No, sir. We emplaced the interceptor in the silo this last week for that test and usually once we get to that point, we go very quickly in terms of through the preparations. We delayed the test—originally, it was to be flown in December and we had to delay it to May because we discovered in the flight test that we flew last September that we had an issue with part of the telemetry system. That is, part of the test unique hardware on the missile that had to be replaced because there was a chance that we would lose all of our data in flight and we did not want to do that. So this was a configuration that has to do with the test not with

any of the operational interceptors and so that was what delayed it to May, to have to replace that piece of hardware and then do all the testing associated with it. But we're on track and we should be flying in May and then the next test, as you said, sir—by the way, we're going to bring in the sea-based X-band radar (SBX), that very large radar. That will be integrated into the test in September. It's going to be in a shadow mode for this one in May and be fully integrated in the one in September.

We have now delivered our second forward deployed radar like the one that we have in Japan and we are proposing to take that radar and move it to Alaska. It is currently in California in testing. We'd like to move it to Alaska so it can be as realistically positioned as soon as possible and use it also in that flight test. That's what we're planning right now.

Senator STEVENS. I had several questions about the reports of water in the facilities at Fort Greeley. Now, I can tell you, there has been a heavy snow here and because of piling up the snow from cleaning the driveway, we had about 14 feet of snow around our place up there. But was that a result of snow or what caused that flooding in the Fort Greeley area?

General OBERING. Sir, we had flooding last summer that occurred. That's when we were going on alert for the North Korean missiles. We had part of Missile Field No. 3 that had been completed and we had several silos, about seven, that had not been completed. They were in a transient condition at that point. We had, as you may remember, torrential rains that came through. In fact, it was an all-time record for the amount of rainfall that occurred there and because of the state of construction at that time, we had water that got into the silos. There was nothing that the contractor or that the warfighters could have done about it at that point.

Senator STEVENS. They were empty silos, weren't they?

General OBERING. Yes, sir. They were empty silos. They were not part of the operational capability and we—in order to make sure that we save money on the construction of the silos, we ship basically prefabricated components into the missile field and it was those components that ended up getting flooded. So we have now begun the repairs. We will have the first one of those silos back on line in April, the second one in August, and then we'll have three more this year for a total of five completed and then—I'm sorry, four total this year and three more next year to have them repaired.

EUROPEAN SITE NEGOTIATIONS

Senator STEVENS. Shifting to the Poland situation—thank you for mentioning that. As I understand, you're going to have some exchange of diplomatic notes with Poland and the Czech Government but you've had some criticism about this, too. Can you tell us, what's the status of that now?

General OBERING. Yes, sir. In fact, I just returned from Warsaw last week and from Prague. I was there Monday. We have had an exchange of diplomatic notes. We believe that the formal negotiations with both countries should begin in about the mid-May timeframe. We believe that we're getting strong support from within

the governments there in Poland and the Czech Republic. During the visits that I've had there, what we have discovered is a lot of the popular objections that are occurring are because the people don't realize—don't have good information in terms of the extent, the details and that type of thing and so we are working with those governments to put together the materials that would be required to educate and to better inform the people in both those countries.

But I did address the parliament in both countries. We met with both the majority as well as opposition party members, we met with all of them. In the case of the Czech Republic, they actually sent a parliamentary delegation to Kwajalein to look at the radar and to see how it operates and to see what effects it has and they were very, very pleased when they left there. In fact, we had been telling them what to expect and the headline in one of the popular Czech papers was that the Americans are telling the truth. That came from that visit. And that included one of the opposition party members.

So I think we're making great, steady progress. I also briefed the NATO Council, as I said in my statement, and the NATO Russia Council on Thursday and Friday. As the Secretary General stated, we are now getting unanimity in the NATO Council on the perceptions of the threat and that we have to move ahead. I believe that we're also finding a great way to move ahead in terms of integrating this system within a NATO framework and we've educated them on how that could be done. We ran simulations. And to give you an idea of the popularity of this and the interest, we actually took a technical team over and we had set up simulations of missile attacks into Europe, into the United States and how the system—what would happen if we did not have a European component, what would happen if we did have a European component of the long-range protection, and what would happen if we have the European component tied to a NATO deployable capability. We had almost 200 people come through those exhibits in 2 days and so there was an incredible amount of interest. Every country, just about, in the Alliance was represented there.

AIRBORNE LASER

Senator STEVENS. That's good. One last question, Mr. Chairman and then I'll move on. I know there are others. The airborne laser (ABL) program seems to be making great strides. It's been some time since we went out there. How much can you tell about this in an open session?

General OBERING. Quite a bit, sir, if you like. The aircraft actually, when it's complete, will have three lasers onboard the aircraft. It will have a tracking laser that it uses for very precise tracking. It has an atmospheric compensation laser that goes out along that track and measures the distortion in the atmosphere and feeds that into a fire control system that then uses that information to deform mirrors onboard so that the high-energy laser, the laser that actually destroys the boosting missile, when it goes out, it goes out in a deformed state and then uses the atmosphere to focus the energy. We now have two of those three lasers onboard the aircraft—the tracking laser and the atmospheric compensation laser. We have actually lased with the tracking laser and we've been successful in

that. Now we're coming up on the atmospheric compensation laser to be able to fire and to use that as well. So we're going to achieve some very successful knowledge points in that regard in the next several weeks. In addition, we have fired the very high-energy laser over 70 times in a 747 mockup. It was successful in the testing so now we have dismantled that laser and we're going to reinstall it or install it on a flying 747 this next year. So it is making great progress. It is incredible. It is just remarkable to see what American technology and ingenuity can do. It would make you very proud, as you know, when you visit that. But they are making great strides. It is tough. It's tough technical work but they are making great strides.

Senator STEVENS. I look forward to seeing it. Thank you very much, Mr. Chairman.

Senator INOUYE. Thank you. Senator Shelby.

BASE REALIGNMENT AND CLOSURE

Senator SHELBY. Thank you, Mr. Chairman. General Campbell, with the 2005 base realignment and closure (BRAC) announcement, much of the missile defense research and development is in the process of being consolidated. What are the resulting benefits to the missile defense program that will be realized as a result of this consolidation? You'll be right in the midst of it.

BENEFITS OF CONSOLIDATING ARMY BALLISTIC MISSILE DEFENSE ACTIVITIES AS A RESULT OF BASE REALIGNMENT AND CLOSURE

General CAMPBELL. Yes, sir. I think what that's going to do for us is bring the developers—General Obering's folks together with those that are working some of the basic technologies. And there is a synergy there of being able to gather together and really get a better understanding between the communities and where we need to go in the future. So from my perspective, it offers the opportunity for the Missile Defense Agency and Space and Missile Defense Command to have a joint venture as we move forward in developing a missile defense system.

RELATIONSHIP BETWEEN NEAR-TERM AND LONG-TERM BALLISTIC MISSILE DEFENSE EFFORTS

Senator SHELBY. General, would you discuss briefly the priorities of the near-term missile defense capabilities such as Patriot, THAAD, and the GMD system as they relate to the need to pursue more advanced systems such as kinetic energy interceptor (KEI) and the multiple kill vehicle (MKV).

General CAMPBELL. In my view——

Senator SHELBY. Can you do that here?

General CAMPBELL. Yes, sir. I think generally in my view, we should continue to mature the GMD system. We should move ahead with the plans we have for Patriot, which include advancing Patriot from its configuration today to the Patriot advanced capability 3 (PAC–3). I think it's vitally important that we continue with fielding the THAAD system to meet threats that we anticipate will be evolving over the next 7 or 8 years. In terms of other capabilities that General Obering is working on, the KEI and ABL, I

think it's important that we continue to invest in those programs and he'll reach a decision point in about the 2009 timeframe to decide which way to go but I think it's a hedge against future threats.

Senator SHELBY. As far as the PAC–3 Pure Fleet, if fully funded, what increase in capabilities would this initiative bring to the Army and how might this benefit the combatant commanders?

General CAMPBELL. Today we have a shortage of Patriot capability around the world to meet combatant commanders' requirements so it's essential, in my view, that we go ahead and pure fleet the system. In fact, the Army has committed to developing and standing up an additional 2 battalions and once we've achieved that, we'll have 15 battalions and that will basically meet combatant commanders' needs and this gives us extended range, greater lethality against the type of threats we expect to see in the future.

Senator SHELBY. Thank you. Thank you, Mr. Chairman.

Senator INOUYE. Thank you. Senator Feinstein.

TESTING

Senator FEINSTEIN. Thank you very much, Mr. Chairman. I wanted to ask questions, if I might, about the test coming up in May or September because the prior tests haven't been very successful in many ways. The question is, how realistic these tests really are going to be, whether you're going to employ countermeasures, whether they are really geared to intercept a real scenario or whether they are highly structured just to hit the mark. So I'd like to ask both of you if you could tell us a little bit more about what these tests are going to be and what they're not going to be.

General OBERING. Thank you very much, Senator. Yes, ma'am. First of all—I'll focus just on the long-range system. We were very successful in 2000 and 2001 where we flew the long-range interceptor, a prototype of the kill vehicle and we had a target launch vehicle, we called it, for the booster, to keep it within the range of safety constraints that we were exercising at the time. We were so successful that my predecessor stopped that program and had us go ahead and transition to the operational configuration for the booster and we went into produce-ability for the kill vehicle.

When we came back into flight test in late 2004 and early 2005 is when we had the two failures of the interceptor to leave the silo and those were—in one case, it was a configuration issue associated with the test, not with an operational configuration, and in the other, it was a minor software timing issue that actually happens on rare occurrence. It just so happened to occur during that countdown. It was only one line of code that changed for the missile. Since then, we have flown successfully twice and one of those was an attempted intercept, which did occur last September.

Now, there is a misconception and if you bear with me, that test was a threat representative target. It flew what we would expect a missile launch from North Korea in the United States designed to basically emulate a threat missile coming from North Korea and an interceptor coming out of Alaska. So that geometry we can match by launching a target out of Alaska and an inceptor out of California. In this test, we did have a threat representative target. We had an operational radar at Beale in California and we had sol-

diers manning the consoles. They were not aware, by the way, of the time of the target launch. All they knew is that there was a period of interest, as we call it that was opening up, which is not unusual.

They roughly knew not the trajectory but the azimuth in terms of the direction. But that is also something you would expect in a realistic scenario because if they are launching from North Korea, we generally know the fan spread that would be coming toward the United States. So that all is realistic as well.

We actually used the operational fire control system, the hardware and the software. We used an operational interceptor and the operational kill vehicle. Now, the fact that we did not have countermeasures on that—we did fly countermeasures in 2000 and 2001. The reason we did not have it on the left several tests was because coming out of those interceptor failures, we wanted to make sure that we were taking this a step at a time based on the independent review team's recommendations that I chartered back during those initial failures in 2004 and 2005.

By the way, just because you do not have countermeasures does not mean that it's not realistic. It's not something you would assume could happen all of the time with respect to missiles.

In addition, I think a program that is widely recognized to be very operational and realistic is our aegis program and that is a midcourse interceptor as well and we haven't flown against countermeasures in that program either. But that's not because of the capabilities, it's because of how we are approaching our testing as we go through. So to say that just because you don't have countermeasures is unrealistic. I don't agree with, Senator.

POTENTIAL THREATS

Senator FEINSTEIN. Okay. Other than Russia and China, which countries do you view as a realistic threat at this time, with the will, the financial background, et cetera, the ability?

General CAMPBELL. Well, first of all, the system that we're developing is strictly intended to counter two countries of particular note—North Korea and Iran. We have watched——

BALLISTIC MISSILE THREATS AGAINST THE UNITED STATES

Senator FEINSTEIN. You view Iran as a realistic threat against the United States. A ballistic missile threat against the United States?

General CAMPBELL. Yes, and I'll explain that statement.

Senator FEINSTEIN. Okay.

General CAMPBELL. If you look at what happened in the 1990s in North Korea, we saw them acquire Scud technology, which is a shorter range missile technology and they began to grow that. They grew into a NODONG, which is a medium-range missile and then they began to improve that and to develop longer-range weapons and they flew two of those. They flew one in 1998, which was a TAEPODONG 1 and they flew a TAEPODONG 2 last summer that failed shortly after liftoff and we know that they are continuing that move.

Now, we're seeing the very same evolution in Iran. We're seeing them take shorter-range missiles and grow them to longer and

longer range weapons. They are already testing weapons that are of much greater range than they would need in a regional fight, for example. So why are they are doing that? We have to be concerned about that, especially considering the statements that they've made about the aggressiveness toward the United States and Israel.

Senator FEINSTEIN. Let me just stop you there. You view the TAEPODONG 2—not the 3 but the 2—as a realistic threat to the United States?

General OBERING. I believe the TAEPODONG could be a very realistic threat to the United States. It would be—most of the experts agree that it would be capable of reaching the United States.

Senator FEINSTEIN. In part.

General OBERING. We don't know precisely and we don't know that much—all we know is based on what we have observed and what we believe. We believe it would be capable of reaching the United States.

Senator FEINSTEIN. Okay. Would you relate that now to the Iranian missiles, please?

General OBERING. Well, first of all, in 1998, the intelligence experts said that the North Koreans would not be capable of flying a long-range weapon for 5 or 8 years. That's what their predictions were. They flew one the next month. It surprised everybody. Right now, the experts are saying that Iran will not have an ICBM until 2010 to 2015 timeframe. But it's going to take us at least that long, until 2011 or 2012, to get a first capability in the ground to be able to protect our European allies from that potential and that growing threat. But we're seeing again the same evolution.

Iran also stated, as the North Koreans did, that they want to develop a space launch capability. And if they do that—we believe that could occur imminently. If they do that, they will have demonstrated all of the building blocks for an ICBM capability. So what we're trying to do is stay ahead of what we believe to be an emerging threat because we can't wait until they actually demonstrate and then say, now let's go find a way to counter it because we'll be 3 or 4 years behind the power curve at that point.

Senator FEINSTEIN. Thank you. Thank you very much, Mr. Chairman.

Senator INOUYE. Thank you very much. Senator Cochran.

Senator COCHRAN. Mr. Chairman, thank you very much for convening this important hearing. We appreciate the cooperation of our witnesses today and the hard work being done to help ensure we are protecting the security of our country against a missile attack. We have deployed forces around the world, too, who benefit from our capability to protect our troops against harm from missile attacks.

There has been some who have said that our Defense Department has exaggerated the threat that we face from missile attack. Could you put that in a context of the realities? I know this is not a closed hearing and we can't go into classified material, but to the extent that you can, is there a way to explain this so we can explain to our constituents why it is necessary to spend so much money to develop a ballistic missile defense capability and deploy these defenses now?

General OBERING. Well, sir, I'll try a first crack at that and then, Kevin, if you'd like to add on.

First of all, ballistic missiles are very attractive to countries like North Korea and Iran. We also saw them used in the first gulf war and against our forces in Operation Iraqi Freedom, in which the Iraqis fired ballistic missiles at the Coalition Forces and by the way, they were completely defended by the Patriot system that we had deployed. The reason that they are so valuable is they see a way of basically leap-frogging and countering what they see to be overwhelming conventional capability on the part of the United States and our allies. So when you combine a ballistic missile with a weapon of mass destruction, either nuclear, biological, or chemical, it gives them that leverage.

What they would like to be able to do is to use that to coerce us or our allies or to drive wedges between us. Because if you don't have a defense against a missile like that, then there is that possibility for that. We saw the hostage taking that took place with our British allies by the Iranians, for example. You can imagine how that scenario may play out if they were equipped with a long-range missile that was capable of reaching capitals of Europe with a nuclear warhead. We know that there has been this growth in North Korea with respect to nuclear capability and they, in fact, tested a device, we believe last fall. We know that there is collaboration between the North Koreans and the Iranians. So we have to, as I said earlier, we have to be very attentive to that.

If we can—and I sincerely believe this—if we can join together with our NATO partners and deploy effective missile defenses on a widespread basis, I think it begins to devalue these weapons tremendously because now they realize that they can be destroyed. They can be effectively countered so they lose that attraction that we've seen. And I think this fits very nicely into a spectrum of deterrents on one hand, where you can deter countries that are deterrable. Arms control measures, both positive and negative sanctions for those countries that can be affected like that, such as Libya, but we have to face the fact that in the 21st century, we may run into the equivalent of a nation state, suicide bomber or the lack of control of these weapons as they develop them within a country to where we have to be prepared to be able to actually knock down a missile in flight.

So I believe it is something that we need to do, not just to counter them in an operational sense but also to prevent them from being used here politically to be able to intimidate our allies and our friends.

Senator COCHRAN. General Campbell.

TERRORIST MISSILE THREATS AGAINST THE UNITED STATES

General CAMPBELL. Yes, sir. If you look at inventories of missiles within those particular countries of Iran and North Korea, if you look at the testing trends inside those countries, it's not a marathon, it's a sprint to get to what their objective is. And if you begin to look inside war fighting doctrine for North Korea—I mean, it's one of their principle elements that they are going to use in wartime, with their short-range and medium-range ballistic missiles.

So in my view, our adversaries are in a sprint to develop their capabilities.

TERMINAL DEFENSE

Senator COCHRAN. The emerging new capabilities that we have, the THAAD system, for example, is capable of being deployed several different places and Europe is one of those areas where we are exploring possibilities for deployment. What is the status of the actual execution of the plan for deployment of that system?

TERMINAL HIGH ALTITUDE AREA DEFENSE PROGRAM STATUS

General CAMPBELL. Well, sir, we've got the first two fire units under contract and they will be delivered in the next 2 years, 2008 and 2009, those two fire units. We have two more that we've added to the program as a result of the recommendations from Strategic Command as well. By the year 2013, we should have four fire units that would consist of almost 100 missiles available with respect to THAAD. It is a key element of an overall layered defense because it operates both inside as well as outside of the atmosphere in that region, which is attractive from a defender's perspective. It is very useful with respect to deployed forces and as you said, in terms of that defense in the terminal phase.

It has been proceeding very nicely with its test program. We have now had three of three successful intercepts with that missile this past year and this year. We had a successful test just 2 weeks ago and we have two more tests this year. One is a fly-out basically in the atmosphere, a very, very high speed to determine the ranges of the test envelope and then another intercept of a separating warhead this year as well. So the program is on track. We have a great relationship with both Strategic Command as well as the Army in how we do the transition transfer of that program. So I'm very pleased with that.

Senator COCHRAN. In connection with the testing that you're doing on all of our defensive systems, is the budget request consistent with what your needs are?

BALLISTIC MISSILE DEFENSE BUDGET ACCURACY

General OBERING. Yes, sir. We believe so. Like I said, we're spending almost $2 billion of our budget on testing every year now, across the board. The constraints that we have primarily have to do with range infrastructure in terms of—for example, in Hawaii, we have the Pacific missile test facility there completely maxed out. We're basically—we have them engaged almost around the clock with our testing between the THAAD program and the aegis program and then support of long-range test as well, and they are doing a great job.

But we also like to make sure that we have enough time between these tests to evaluate all of the data and to be able to make any adjustments in how we conduct the next test. So there is a serial nature to this.

Senator COCHRAN. Is there cooperation among other departments and agencies and services in the Department of Defense in your plans for an aegis deployment? Do you have the ships that you

need and the other ingredients or elements of that system in place or does this budget contain requests for additional funding for those items?

DEGREE OF INTERSERVICE COOPERATION IN BALLISTIC MISSILE DEFENSE SYSTEMS DEVELOPMENT

General OBERING. Well, it contains requests for additional funding, for example, of the aegis. We're actually ramping up the interceptor production as well on the aegis program for the standard missile 3s (SM–3s) and we will have more than 132 of those in the—as I mentioned, on 18 ships in my opening statement.

We have worked very successfully with the Navy in planning for the transition of the Block 1 missiles, the first version of that. Now, in those 132 missiles, that will consist of three different configurations—Block 1, Block 1A, Block 1B. So there are always changes that we're making to improve the performance, the capabilities, et cetera. But I've been very pleased with the Navy and how we have been working together in planning that transition transfer.

INTERNATIONAL COOPERATION

Senator COCHRAN. My question is on the extent of cooperation we're getting from European allies in the placing of radars and other systems that are essential to the success of these programs. Is that improving or do you have problems there that we need to know about?

EXTENT OF ALLIED COOPERATION IN BALLISTIC MISSILE DEFENSE RADAR AND INTERCEPTOR PLACEMENT

General OBERING. Well, sir, both the Czech Republic Government and the Government of Poland have been extremely forward-leaning with us and as I said earlier, we've exchanged diplomatic notes. We believe the formal negotiations will begin here about the mid part of May and we hope to conclude those this year so that we can begin site preparation work next year. That will allow us to have an initial placement of an interceptor, for example, in Poland in the latter part of 2010 or the first part of 2012, and complete that work in 2013. And as I said earlier, that gives us a very narrow path, really, with respect to the ambiguity in an Iranian development program. We believe that's why we need to get started and continue that. And we are getting strong support.

By the way, I met with the President and the prime minister of the Czech Republic on Monday and also with members of their parliament. I addressed their parliament and I also talked to the leader of the opposition party there and again, I believe that we see a really strong support among the government and we're seeing good support within their parliament and so I'm very optimistic there.

Senator COCHRAN. Thank you. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Mr. Chairman, I am pleased to join you in welcoming General Obering to this hearing.

I would like to thank him, and the men and women he represents, for their important service to our Nation. The Missile Defense Agency plays a major role in pro-

tecting the United States and our deployed forces from missile attack. North Korea's missile tests last year and Iran's nuclear activity provide clear examples of the need for the United States to continue to develop and deploy our ballistic missile defense capability.

I very much appreciate the efforts of the Missile Defense Agency and I look forward to this opportunity to review the progress we are making to defend against threats to our security from missile proliferation.

DEGREE OF CONFIDENCE IN BALLISTIC MISSILE DEFENSE SYSTEM EFFECTIVENESS, WHEN DEPLOYED

Senator DORGAN. Mr. Chairman, there are only 5 minutes remaining on the vote so I will be brief. But let me submit some questions, Generals.

Thank you for being here. Let me ask quickly, assuming that you have deployment of all that which you intend to deploy, with what confidence will these defensive systems operate against an offensive threat? Some, as you know, suggest that offensive systems almost always overcome defensive systems over time and there are some who suggest that upon deployment, the issue of dummy warheads and tumbling warheads and a whole series of issues will allow some to overcome a defensive system. So with what confidence at this point, does the deployment perceive?

General OBERING. Well, sir, I will say that first of all, I have a lot of confidence based on the test results that we've seen so far. To address the countermeasures issue—which is what you are referring to, the dummy warheads, decoys, and that type of thing, we have two efforts that are underway. The first major improvement in that will be the massive SBX radar, for example, that we have now deployed to Adak, Alaska, and has been—we've moved it down just off the coast of California now, to participate in our test program. That represents a capability that is unmatched and it will be able—and you've probably heard me say this before—if we place it in the Chesapeake Bay, we could actually discriminate and track a baseball-sized object over San Francisco. So it has the ability not only to track but to image the threat sweeps. So we believe that will add a tremendous capability and the radar algorithms to support that—we're going to deploy both to that radar as well as to the forward deployed smaller versions of the radar, like we have in Japan.

The second thing we're doing because that is still a very tough problem, is that we're developing an MKV program. That means that for every one interceptor, it would actually be able to take out what we call credible objects, which could be warheads or could be balloons or decoys or dummy warheads for each one of the interceptors. It doesn't mean that we can counter a massive raid attack like you may encounter from a country like Russia or something, which this system is not designed for but it does help us with countries like Iran and North Korea, who are going to get better in terms of being able to use countermeasures. It allows us to take care of those.

Senator DORGAN. My question was designed more to—and it may be a classified answer. I assume that one approaches this not just with the "I have confidence" but with "we have a——

General OBERING. We have data, yes. We have the data but I can't go into what it is.

Senator DORGAN. That is classified?

General OBERING. It is. But suffice to say that based on everything that we have seen, it's very high confidence in that capability.

Senator DORGAN. All right. I'm going to submit some questions on the ABL. I went out and visited that, I guess, 6 years ago or so and it slipped, I think, 4 or 5 years in that period. It seems to me to be a fascinating, interesting technology but it continues to slip. I heard your answer on that as I walked in the room. I apologize for having been late but I'm going to submit some questions on the ABL and also the issue of protection against cruise missiles, which you referred to some. And because of the vote, Mr. Chairman, I will have to hustle along in order not to miss it, but let me thank you for appearing and I will submit my questions in writing. Generals, thank you very much.

BALLISTIC MISSILE DEFENSE SENSORS

Senator STEVENS [presiding]. That's why Senator Inouye and I run the relay to make sure that we don't delay the Generals by our voting schedule. But we appreciate your courtesy.

I do think we ought to schedule a classified briefing on some of these questions and I'll ask the chairman to see if that's possible. But within what we can talk about here now, how many radars are parts of these integrated systems?

DESCRIPTIONS OF RADARS USED IN BALLISTIC MISSILE DEFENSE

General OBERING. Sir, currently we have a forward deployed radar in Japan that have been tested and integrated in the system. We have the Cobra Dane radar that you're very familiar with in Shemya, Alaska. We have the Beale radar in California that has been tested and integrated into the system. We have the SBX that has been tested and we're almost done with that testing and then that will be integrated later this year in the coming months. We have also almost completely finished the testing on the Fylingdales radar in the United Kingdom and gone through the initial integration testing with that as well. So we are incorporating these sensors as they are available and as they are able to be deployed. And by the way, just on a side note, so far, the performance of the radars has exceeded our expectations with respect to accuracy and performance.

Senator STEVENS. I'd like to go into a classified discussion on those in terms of their interoperability and vulnerability. Those are questions I think should be explored by members of the subcommittee. But beyond that, there is a redundancy in it, isn't it? In the system?

DESIGN REDUNDANCIES TO OVERCOME BALLISTIC MISSILE DEFENSES VULNERABILITIES

General OBERING. Yes, sir. We're adding more and more layers of redundancy every year and that is important as we go through because as you well know, on any type of a defensive system, you need to have that type of redundancy.

Senator STEVENS. The NODONG 2 would certainly reach Shemya, couldn't it?

General OBERING. Well, the TAEPODONG 2—yes, sir. Yes, sir. We believe it would have certainly the range to do that.

AEGIS BALLISTIC MISSILE DEFENSE

Senator STEVENS. What about the aegis—the standard missile program? I'm told that you have several control systems and the third stage rocket motor. The overall status of this aegis system, is it disclosed in your statement or in General Campbell's?

General OBERING. Sir, I talk about that a little bit in my written statement but I'll be happy to answer a couple of things. There were two issues that we were having to address as part of our development on the aegis SM–3. One was the third stage rocket motor and the other was the solid divert anticontrol system module for the interceptor. We have now flown the third stage rocket motor and we have shown that it does and can do the pulsing that was designed. That was the hang-up in some of the previous testing. The solid divert matching control module, we have also tested that. We've gone through exhaustive testing on the ground. That is planned for the next flight testing in terms of whether or not they are flight proving that that design change is working well. But all indications from our ground testing and hot fire testing are that we have solved the problem that was hanging that up.

Senator STEVENS. Will that be tested on the ship this year?

General OBERING. Yes, sir. It will be tested in our flight test.

Senator STEVENS. Are there any major challenges to that test?

General OBERING. I'm sorry, sir?

Senator STEVENS. Are there any major challenges to that test?

General OBERING. No, sir. In fact, we're planning to conduct that test tomorrow.

TERMINAL HIGH ALTITUDE AREA DEFENSE SYSTEM TRANSITION TO THE ARMY

Senator STEVENS. General Campbell, you mentioned THAAD. When is that going to—that transition soon—when is that?

General CAMPBELL. Sir, that will transition approximately 2010 to the Army and then we'll have some decisions to make about the actual deployment sites for those particular batteries.

Senator STEVENS. Are you developing milestones—up our way, we call them mileposts. Milestones get covered with snow—but mileposts for that program?

General CAMPBELL. Yes, sir. General Obering has milestones specifically for the development and we have milestones now that we are working for developing the concept of operations to employ the system.

Senator STEVENS. And you expect to be able to use it in 2010?

General CAMPBELL. Approximately 2010, sir, yes. In fact, there is a possibility that we'd be able to use it in an exercise in 2009 if the development continues on its current path.

AIRBORNE LASER

Senator STEVENS. Go back to the ABL, if you would. Do you expect any delays in that program?

General OBERING. Sir, the delays that Senator Dorgan was referring to earlier, about November 2004, we really did, I believe, turn a corner on the program. Before that time, the program schedule was basically unstable. We were losing 2 days for every 3 days that we would attempt on a program. We have addressed that. The team pulled together. They focused on the technical programs and began to really resolve those.

I will tell you that what I have seen since November 2004 is a steady progression. There have been some minor delays here and there as they work through—mainly these are integration issues now. The actual functioning of the components, the laser modules themselves, the optical train and everything else, they have pretty much knocked down the technical issues. That is not to say that they are out of the woods. There is still work to be done. As I said, we should have some significant knowledge points on the program in the coming weeks, especially by the end of June, if they stay on the schedule that they're on. We should be able, by that time, to know whether the tracking laser works properly. As I said, we tracked the target 75 kilometers away and closed that fire control loop. We should know if the beam illumination laser, the atmospheric compensation laser, is working properly and feeding that information into the system and we actually have a surrogate of the high energy laser on the aircraft as well. So we should know if the entire system is working the way that it is designed by the end of June. That will be a significant look ahead.

And then if all of that is successful, we will dismantle—we will put the aircraft back on the ground. We will open it up and we'll reassemble the high-energy laser onboard the aircraft and get that back in the air next year so that we can attempt to shoot down a boosting missile in the mid part of 2009.

Senator STEVENS. All three components will be back together onboard by 2009?

General OBERING. Yes, sir, and flying.

Senator STEVENS. Is that at Vandenberg?

General OBERING. We're actually doing that work between Wichita and Edwards Air Force Base, California and also I should say, Sunnyvale, California as well.

MIDCOURSE DEFENSE

Senator STEVENS. To go back to that GMD system, I'm told we've got about $2.7 billion allocated to this program through 2008. But my staff tells me that we were short $1.1 billion in 2007. Now, does that 2008 figure play catch up or are we still going to be short in that system?

TERMINAL HIGH ALTITUDE AREA DEFENSE SYSTEM TRANSITION TO THE ARMY

General CAMPBELL. No, sir. I think that we will be caught up in terms of how we have managed the program and tried to bring the costs under control. It also adds more interceptors to the inventory.

It begins to work down some of the costs variances that occurred. When we had, for example, if you remember, we had the explosion in California back in August 2003 that wiped out one particular configuration of our booster. We lost six interceptors as a result of that explosion.

Also, I diverted four more interceptors from the inventory into our flight and ground test program 2 years ago to address the initial failures that Senator Feinstein referred to and we will have caught back up on our original target inventory of 30 by virtue of being able to basically put the resources where we need to within the program and like I say, we cut out some unneeded overhead to buy back at least four more of the interceptors this last year.

Senator STEVENS. I'll shift again. The chairman is here. One last question. On the aegis ballistic missile defense system, am I to understand that by the end of this year, all three services will be involved? The Air Force, the Army and the Navy?

General OBERING. In terms of the transition transfer of components, yes, sir. We have the early warning radars being transitioned to the Air Force. The aegis ships and their interceptors will be transitioned to the Navy and the Army is picking up responsibility for the forward deployed radars as well as the operation of the GMD system, so we have all three services engaged and we just got a letter from Admiral Mullins several weeks ago saying that the Navy would be the lead service for the massive SBX radar that I talked about that is going to be deployed to Alaska and California and we believe that's great news because that is an incredibly designed system. Just to let you know how well designed it is, when we moved it from Hawaii where we were doing the final radar calibration and some of the corrosion control work that we had delayed to get it out of the gulf in the summer of Katrina, in the hurricane season then. As it was moving from Hawaii up to Alaska, for a 72-hour period, it encountered continuous 70-foot waves and 75 mile an hour sustained winds with gusts up to over 100 miles an hour and it did beautifully. I went and visited the crew when they were in Alaska and they were just amazed at how stable the platform was and how seaworthy and how well it performed. So we have very good news from that.

Senator STEVENS. I hope you're not around when a storm takes place up there.

They did have a typhoon just north of that in 2005.

General OBERING. Yes, sir.

Senator STEVENS. Senator, thank you very much.

SPACE TEST BED

Senator INOUYE [presiding]. Thank you very much. In my opening remarks, I said that the GMD, THAAD, and aegis, if need be, can be operational and it costs us about $90 billion to get to this stage. There is a small item in this fiscal year 2008 request, $10 million for a space test bed. How much would that cost?

COST OF A TERMINAL HIGH ALTITUDE AREA DEFENSE SPACE TEST BED

General OBERING. Well, sir, we have a very small amount allocated across the entire defense program out through 2013 that is, I think it totals around $300 million for that space test bed.

What we're doing there, if I could elaborate there a little bit. We believe that it is always prudent to continue to think about the future and what you may need in the future. We believe that space offers a lot of flexibility. It offers a lot of attraction with respect to that flexibility and the access, et cetera that can be accommodated from space.

So we allocated this very small amount to do foundational testing, to see whether or not you could apply missile defense from space. It's in keeping with the President's space policy and it is in keeping with this idea of trying to balance the future versus the near term. I'll give you an example of why that is important, I think. If we had only concentrated on the near term back in the early 1990s, then about the systems that we would have would be probably the Patriot, since that was underway and the THAAD program, which was also underway. But programs like the GMD, at that time, were considered futuristic and if we had not maintained that balance overall in the agency at the time, then we would not have had a system to turn on last summer when North Korea did what they did.

So it is a very, very—as you say, very small amount out of the $8.9 billion that we've requested. But we think it's prudent to do that experimentation. Now this does not buy any hardware, the $10 million. It does not start any type of an interceptor program. What it is doing is funding experimentation, analysis, and studies so that we can engage with our contractors to understand what is within the realm of the possible and what is not. For example, if you were to add a space-based layer other than sensing, you would need to really understand weight and the cost per pound to orbit and what kind of improvements can be made there. You really need to understand the kinetic control and battle management concept of operations and how would that be done. You need to understand the differences in sensing from space as well as from the ground. So there is a whole host of questions that would be answered with this very small experimentation.

We think that there will be a healthy debate—should this country decide that it needs to do that in the future; there will be a healthy debate as to whether we actually go ahead with that type of capability. We believe that this would help to inform that debate because it may be such a technical challenge that it may not be worth pursuing and that's the type of thing we're trying to answer.

COOPERATION WITH JAPAN

Senator INOUYE. So this phase of the program will not be carried out at the expense of what you're doing now. Our largest partner in missile defense is Japan and the total contribution, I think, is about $5 billion and there are plans to spend more than $1 billion to co-develop the standard missile block for sea-based missile defense. I'm concerned that MDA's abrupt decision to move away from this upgrade could affect the relationship. Am I correct?

JAPANESE BALLISTIC MISSILE DEFENSE DEVELOPMENT PARTICIPATION

General OBERING. Well, sir, let me talk to that. First of all, I talked to Senator Feinstein and Senator Durbin about the threat maturation, we know that we are going to be faced with threats in

that timeframe, meaning in the next decade, that are, in fact, going to be complex. They are going to be able to use decoys and countermeasures and that type of thing and you're going to have to have the ability, working with the radars as well, to be able to counter those decoys and that type of thing. So you're going to have to have an ability to kill more than one object with an interceptor or it won't be cost effective in terms of the number of interceptors you'd have to fire at any given threat missile. We have been—this is a deviation in terms of the kill vehicle planning that we agreed upon with the Japanese, the initial analysis now almost 2 years ago. So what we're doing is we have launched another analysis, working with the Japanese so that they can understand the rationale—they can understand the threat maturation that we see. They can understand the need for this and they have shown us that they are interested in the looking at the results of that analysis. We've gotten positive answers back on that.

I'm sure it is a concern to them because it is a change to the program, but when we first started the program back in June, when we kicked this off, I told them at that point that there are two things we have to be careful of. One is, we want to be able to take advantage of technology improvements that may come out and number two, we have to be able to address maturations in any evolving threat. So from the beginning, we've talked about this. It's a matter of making sure that they stay on board with us through these analyses, these studies and these engagements. So I believe that once they understand the facts and the figures, as we can present them, I think they will feel better about this.

And by the way, as you state, that is a very strong relationship. It is a very strong partnership. They are developing those co-technologies that we've been co-developing with them already, as I stated in the opening statement. We have a very strong co-test program, participation in testing. In fact, they intend to have a flight test this year, which they will use Japanese SM–3 in that flight test. So we're—it's a very strong relationship and we stay engaged with them on a regular basis. I'll be headed back to Japan here in just the next month or so.

Senator INOUYE. A recent test of the THAAD has been successful. What's the next step?

TERMINAL HIGH ALTITUDE AREA DEFENSE SYSTEM TESTING

General OBERING. The next step is, we will fly a test missile at the White Sands Missile Range that allows us to explore further elements of the envelope, meaning we will fly at lower altitudes much longer to see how well the missile performs. That will not be against a target. But then later in the year, we plan to fly against a separating target—that means a warhead that is separated from a booster, to be able to engage that and that would occur in the Pacific.

ADDITIONAL COMMITTEE QUESTIONS

Senator INOUYE. General Obering, General Campbell, I have several other questions I'd like to submit but we have another meeting so if we may, can we just submit our questions for your responses?

General CAMPBELL. Yes, sir.

Senator INOUYE. I would appreciate that and with that.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTONS SUBMITTED BY SENATOR DANIEL K. INOUYE

Question. The interceptors in Europe will be downsized versions of the ones currently in Fort Greely and Vandenburg. How much development and testing needs to be done on these two-stage interceptors in order to ensure that they are capable of intercepting a ballistic missile? Are we moving too rapidly on fielding this capability before this development and testing takes place?

Answer. The interceptor planned for deployment in Europe is a 2-stage configuration of the currently deployed and flight-tested 3-stage booster at Fort Greely and Vandenberg Air Force Base. The common components between the 2-stage and the 3-stage booster have undergone significant, ground, flight, and qualification testing as part of the 3-stage development effort. Because the 2-stage interceptor planned for Europe has fewer components than its 3-stage predecessor, the planned 2-stage variant is a less-complex version of the successfully tested and fielded 3-stage interceptor.

The 2-stage interceptor program includes rigorous component qualification, integration testing, ground testing, and flight testing. The current flight test plans for the 2-stage variant feature two flight tests prior to completion of the first 2-stage interceptor for deployment, one of which includes EKV intercept of a threat-representative target. The Ground-Based Midcourse Defense (GMD) Fire Control (GFC) and Command and Launch Equipment (CLE) software adapted for the 2-stage interceptor will also be included in the 2-stage intercept flight test. The 2-stage intercept flight test is tentatively scheduled for 2QFY11 with initial interceptor emplacement in 4QFY11. Prior to the intercept flight test, we will perform a booster verification flight using an EKV mass simulator.

The Missile Defense Agency has identified and is currently working to mitigate risks for 2-stage interceptor development. Overall, the development and fielding for the 2-stage interceptor is low risk. The most noteworthy risks are with the software changes and integration required with the 2-stage interceptor, the CLE, and the GFC in order to optimize the interceptor's performance envelope. These risks will be mitigated through our ground and flight test programs.

Booster modifications (3-stage to 2-stage) are neither uncommon, nor unprecedented. In fact, the Payload Launch Vehicles (PLVs) flown in the GMD program's first ten Integrated Flight Tests (January 1997 through December 2002) were 2-stage variants of the standard 3-stage Minuteman boosters. So, the Missile Defense Agency has successful prior experience in modifying 3-stage boosters to fly 2-stage missions.

Given our experience in booster modifications and integration, 3-stage leveraging and lessons-learned, and the planned 2-stage qualification, ground, and flight testing prior to the first European emplacement, the Missile Defense Agency does not believe that we are moving too rapidly in fielding this critical capability.

Question. How many Standard Missiles are we buying in fiscal year 2007 and how many are we planning to buy in fiscal year 2008? Why does MDA incrementally fund its missile programs, and when will they be budgeted for in procurement accounts?

Answer. MDA is planning to deliver 13 Standard Missile-3 Blk IA's in fiscal year 2007 and 20 additional Blk IA missiles in fiscal year 2008. MDA currently has authority to use RDT&E funds to develop and field missile defense capability. Incremental funding provides the flexibility to procure more diverse warfighting capability for the same investment. An element of the BMDS, the SM–3 Blk IA, is a developmental asset that has not reached the level of technical maturity required to support use of procurement funding.

The Agency's plan is to transfer and transition certain elements and components of the BMDS to the Military Departments for production, sustainment and operation. At that time, the Military Departments will budget and request procurement and O&M funding to acquire and sustain these systems. In the case of the SM–3 Blk IA, the sustainment responsibility will transfer to the Navy in fiscal year 2008 in accordance with the Aegis BMD Block 04 Transition Memorandum approved by the Deputy Secretary of Defense on March 9, 2007.

MDA will continue to develop the BMDS using a capabilities-based, spiral development approach that gives the Agency the flexibility to use developmental assets

such as the SM–3 Blk IA to provide initial ballistic missile defense capabilities to the warfighter while concurrently continuing our development and testing regimen.

Question. A study is underway to look at sea-based platforms to host the Kinetic Energy Interceptor. However, there are challenges associated with each ship or submarine platform being considered. Can you update the Committee on the study and tell us what platforms are best suited to host the KEI?

Answer. The Kinetic Energy Interceptors Sea-Mobile Platform Alternatives Assessment is conducting a detailed analysis of six specific ship and submarine classes: DDG–51, flight IIA (surface combatant), LPD–17 (amphibious assault ship), T–AKE (support ship), CV–2500 (commercial container ship), SSGN (OHIO class SSBNs converted for non-strategic missions), and a conceptual SSXN (potential conversion of OHIO class SSBNs to the missile defense mission). Prior related studies have indicated that these ship classes provide a broad range of benefits and challenges in supporting Kinetic Energy Interceptor's missions. This study will greatly reduce the risk of a costly booster vehicle redesign should the Agency decide to field the Kinetic Energy Interceptors on ships or submarines.

The Alternatives Assessment will be completed in September 2007 with an assessment of each platform's mission performance, cost, and risk across the entire Kinetic Energy Interceptor mission space: boost, ascent, and midcourse. Near term, the results of the Alternatives Assessment will be used to help ensure that the Kinetic Energy Interceptor booster design is compatible with likely sea-based platforms and inform Agency trade studies on investments in future capabilities. The specific sea-based platforms on which Kinetic Energy Interceptor is fielded will be determined when there is an Agency decision to develop sea-mobile Kinetic Energy Interceptor capability.

GROUND-BASED MISSILE DEFENSE

Question. What milestones and testing events need to occur prior to announcing an initial operating capability of the ground-based missile defense system?

Answer. Today, the Ballistic Missile Defense System (BMDS) could provide a limited defense if called upon as the initial set of capabilities necessary to defeat an incoming ballistic missile have been fielded and demonstrated. These capabilities are currently in a "shakedown period" under which our crews are gaining valuable experience in their operations, and should some threat arise, we could transition from a test phase to an operational phase in a matter of hours. MDA is working with the warfighters to ensure they are ready to operate the system when directed as well developing the capability to operate and test the BMDS concurrently.

A Secretary of Defense decision to put the system on a higher level of alert will be based on a number of factors. These factors include: the advice he receives from the Combatant Commanders, and other senior officials of the Department; our confidence in the operational procedures we have developed; demonstrated performance during both ground and flight tests; modeling and simulation; and the threat.

Question. If the third stage rocket motor is removed from the ground-based interceptor, can it do boost phase intercept? What would its capabilities and characteristics, including size and mobility, be in comparison to the Kinetic Energy Interceptor?

Answer. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR ROBERT C. BYRD

Question. General Obering, since, as you testified, the current Ballistic Missile Defense (BMD) initiatives are designed to counter the asymmetrical threat from Iran and North Korea, what formal negotiations are currently underway to obtain acquiescence from the Russian Federation for the deployment of these systems? Does the Department of Defense intend to proceed with the stationing of missiles and radars in Eastern Europe independent of Russian Federation acceptance of the deployments?

Answer. The deployment of Ground Based Interceptors and a Mid-Course Radar to Europe is critical to the defense of the United States, its deployed forces, and its European friends and allies. We do not believe Russia ought to be able to exercise a "veto" over our decision to proceed. However, the Department will continue its efforts to explain the non-offensive nature of the Ballistic Missile Defense system to the Russian Federation and will continue to provide transparency into our efforts and seek ways in which we may cooperate with Russia on missile defense.

Question. General Obering, the proposed missile defense deployments in Poland and the Czech Republic have sparked a great deal of public debate, and the bilateral agreements you reach with those countries will be subject to approval by their re-

spective Parliaments. In light of the fact that it is far from certain that both countries' governments will approve these deployments, how do you justify the large funding request in the fiscal year 2008 Budget for this program? Would it be more prudent to first ensure that this project will be allowed to proceed before committing these funds?

Answer. There are two principal agreements under negotiation with the Czech Republic in support of the European ballistic missile defense sites in the Czech Republic (radar) and in Poland (ground-based interceptors): a Defense Basing Agreement (status of forces and general basing provisions) and a Ballistic Missile Defense Agreement (provisions for the construction, maintenance, sustainment, and operation of the sites). Progress on these agreements has been timed to support the approved program of record resourced in the fiscal year 2008 President's Budget request.

Since the 2nd quarter of fiscal year 2006, our approved program of record has specified major construction contract award in the 4th quarter of fiscal year 2008. Negotiations of the two agreements with each country began in May 2007 with a goal completion by Fall 2007, well before the need date of 4th quarter of fiscal year 2008. Based on the approved program of record, negotiation of the Defense Basing Agreement and Ballistic Missile Defense Agreement with both the Czech Republic and Poland are proceeding on schedule. The Polish and Czech governments publicly support this initiative, and we are confident that the governments will work with us to conclude the agreements as soon as possible.

Question. General Obering, you testified that a ballistic missile defense deters nations from developing weapons that can be countered. You also testified that Iran and North Korea currently are developing missile technology at a "sprint pace." Since the United States claims to have a functioning missile system defense against limited attacks in place, why is this not deterring their development efforts? What evidence is there that a missile defense program will serve as an active deterrent to a rogue nation missile or nuclear development program?

Answer. My testimony made the point that missile defenses could help dissuade a government from further investing in ballistic missiles and deter it from using those weapons in a conflict. But the threats posed by rogue nations such as Iran and North Korea continue to challenge our notions of deterrence and defense. Surprise—strategic, tactical, and technical—is an expected feature of today's security landscape. While deterrence remains the cornerstone of our strategy, we recognize an increased risk that deterrence may fail. The actions of North Korea and Iran this past year demonstrate the determination of these rogue regimes to achieve a ballistic missile capability and potentially weapons of mass destruction to further aggressive ends. Under such circumstances, missile defenses are highly desirable as a hedge against the failure of deterrence. As the robustness of the capability fielded increases, we could expect that the deterrent effect of this initial capability would grow by reducing an adversary's confidence in the success of an attack.

Question. General Obering, what missile system is being considered for the Polish deployments and are the development schedules and the deployment schedules in sync?

Answer. The interceptor planned for deployment to Poland is a 2-stage variant of the currently deployed and flight-tested Ground-Based Midcourse Defense (GMD) 3-stage Ground Based Interceptor (GBI) deployed at Fort Greely and Vandenberg Air Force Base. The development and deployment schedules are synchronized.

The GMD 2-Stage booster development strategy starts with the currently deployed and flight-tested 3-stage booster. Boeing and its booster subcontractor, Orbital Sciences, began working 2-stage development activities on February 23, 2007. In fiscal year 2007 and early fiscal year 2008, the booster contractor will conduct design trade studies and electronic piece/part level testing. A Program Critical Design Review is scheduled to occur December of 2008. In fiscal year 2009, the booster contractor will complete design modifications and component-level qualification to eliminate the third stage rocket motor and repackage the booster electronics that were located on the third stage. Additionally, navigation and guidance software changes will be implemented to enable the interceptor to perform mission profiles for two stages of flight versus three.

The GMD 2-Stage booster test program includes both ground and flight tests. Two Ground Test Missiles (GTM) will be delivered in the second quarter of fiscal year 2010. Ground tests begin in the third quarter of fiscal year 2010. Two flight tests are planned to prove out the GMD 2-Stage booster performance prior to deploying any of the ten 2-Stage GBIs (interceptor numbers 45 through 54). A booster verification flight using an Exoatmospheric Kill Vehicle (EKV) mass simulator will precede a flight test with intercept from the same location utilizing a flight qualified EKV against a threat-representative target. The booster verification flight is sched-

uled for the fourth quarter of fiscal year 2010 and the flight test with an intercept is scheduled for the second quarter of fiscal year 2011, both from Vandenberg Air Force Base in California. Interceptor deployment into the European Site is scheduled from the fourth quarter of fiscal year 2011 through the second quarter of fiscal year 2013.

Question. General Obering, will a 10 missile deployment be adequate to counter the potential threat from Iran or North Korea if long-range missiles being developed by these nations are used in conjunctions with decoys? What integrated system testing has been done to simulate this challenge? What testing is being planned?

Answer. [Deleted.]

Question. General Obering, since command and control of the Eastern European deployments will be in the United States, what involvement will NATO, the Czech Republic or Poland have in the command and control of these systems? Will NATO support the deployment of this system?

Answer. Our NATO Allies understand that the time available to react to a hostile missile is measured in minutes, not hours. Further, they understand this requires the system to be highly automated with engagement procedures worked out in advance. We have assured our NATO Allies that they will be consulted as these engagement procedures are developed.

Further, we have considered offering situational awareness nodes to Poland and the Czech Republic, and suggested that a similar node could be provided to NATO. The situational awareness node will provide a status of the system so that the viewer will be constantly apprised of the system status. The United Kingdom already has a situational awareness node because it hosts the Fylingdales Upgraded Early Warning Radar.

Finally, we will work with our NATO Allies to develop crisis management/decision procedures to be implemented during times of increased tension that may result in the launch of ballistic missiles against the United States or Europe.

We are actively working with NATO so that it will not only support but will welcome the deployment of a U.S. missile defense system to Europe because the Allies agree there is a threat and understand that the planned U.S. assets in Europe would be highly complementary to any future NATO missile defense effort. NATO is already developing ways to link Allies' short- and medium-range missile defense assets through its Active Layered Theater Ballistic Missile Defense (ALTBMD) system. The U.S. system provides a defense to Europe and the United States against long-range ballistic missiles. Combined, the two systems could begin to defend all of Europe from the full range of threats. Over the last six months officials from the Missile Defense Agency, Office of Secretary of Defense, and State Department have met numerous times with our NATO Allies to explain the threat and proposed U.S. deployment.

Question. General Obering, what type of NATO missile defense deployments are currently being planned and how much is being invested by European nations in such a venture?

Answer. NATO currently has an Active Layered Theater Ballistic Missile Defense (ALTBMD) program to develop a command and control capability to link NATO countries' short range missile defense assets together to protect deployed NATO forces and other high value assets from short and medium range missile attacks. The ALTBMD Program will upgrade existing NATO command and control systems, and will create ALTBMD defense capability at all NATO command levels, from the strategic to the tactical levels.

The ALTBMD Program Office signed a contract worth approximately $95 million with an international consortium led by Science Applications International Corporation to develop and operate an integration test bed for developing and testing the integration/linking of different short range missile defense architectures.

Several NATO member countries currently possess missile defense assets that will be contributed to NATO and linked together via the ALTBMD program. Germany has the Patriot system and is a partner, along with the United States and Italy, in the Medium Extended Air Defense system. The Netherlands also has the Patriot system and is developing a long-range capability for maritime search and track of ballistic missile threats. France is currently developing the SAMP–T air defense system, which will have capability against ballistic missiles in future upgrades. Greece has Patriot systems that could be upgraded to have ballistic missile engagement capability. Denmark and the United Kingdom agreed to allow the United States to upgrade early warning radars on their territory and use these radars for BMD.

Question. General Obering, in addition to the threat of nuclear weapons, the threat of chemical and biological weapons has been put forward as a rationale for the deployment of a ballistic missile defense system. Is there evidence of Iranian

or North Korean research to develop inter-continental ballistic missile weapons or warheads capable of both the accuracy and payload survivability to support these concerns?

Answer. [Deleted.]

Question. General Obering, what are assessed to be the most realistic current threats from Iran: short, medium, or long range missiles? What coverage against an Iranian launch will the Eastern European ballistic missile defense deployment provide that cannot be covered by THAAD, PAC–3, and Aegis deployments?

Answer. In November 2006 and January 2007 Tehran demonstrated that it has short and medium range ballistic missile capabilities by conducting several short- and medium-range ballistic missiles and rocket launches. In the November exercises Iran demonstrated for the world its offensive capabilities via televised broadcasts. Iran dedicates significant resources to acquire ballistic missiles, to include new medium- and intermediate-range systems capable of reaching forward-deployed United States forces and our allies and friends. Our intelligence community assesses that Iran would be able to develop an ICBM before 2015 if it chooses to do so. With the missile firings over the past year, they have also demonstrated the ability to conduct coordinated launch operations.

The capability provided by a GBI site located in Poland, a European Midcourse Radar located in the Czech Republic, and a forward deployed radar could provide redundant protection coverage of 90 percent for the United States and Canada and 100 percent coverage for the territory in NATO that is threatened by long range missiles from Iran, but only by intermediate and short range missile defense forces, such as PATRIOT PAC–3. U.S. missile defense forces such Aegis SM–3 and THAAD (supported by an AN/TPY–2) could be deployed in a crisis to fill any coverage gaps.

Question. General Obering, what is the timeline for Aegis equipped-vessels to have counter-ICBM capabilities and what are the greatest technological challenges to the development of this system?

Answer. The 21-inch diameter Standard Missile-3 (SM–3) Block IIA interceptor paired with the Aegis BMD 5.1 Weapon System will increase our capability by defeating longer-range ballistic missiles, up to and including some Inter-Continental Ballistic Missiles. We have requested funding in fiscal year 2008 to support concept development and complete a System Design Review in fiscal year 2008.

The primary technological challenges are the Lightweight VLS Canister and integrating the Aegis BMD 5.1 Combat System and BMDS to achieve the necessary "quality of service" required to extract the optimum SM–3 Block IIA performance through "Engage on Remote" operations. A lighter canister is necessary to offset the additional weight of the larger missile. The Lightweight VLS Canister will be the first one made with composite materials.

The remainder of the SM–3 Block IIA missile, as funded in the program of record, is a scaled up version of the SM–3 Block IB and integrated into the Aegis BMD 5.1 Weapon System, thereby leveraging the legacy and investment in technological missile propulsion and warhead development. We are confident that these challenges can be met to support initial deployment in 2015.

Question. General Obering, what are the current lift-phase intercept capabilities, what programs are currently underway to develop this capability, and what are the greatest hurdles to developing that capability?

Answer. There is currently no operational boost phase intercept capability.

We are developing two potential boost phase intercept capabilities to supplement currently fielded midcourse and terminal defenses. The Airborne Laser (ABL) element of Ballistic Missile Defense is the primary effort currently underway to address boost phase ballistic missile threats of all ranges. The high-acceleration Kinetic Energy Interceptor (KEI) booster (KEB) development effort, continuing on the recommendation of the Defense Science Board's, is an option in the event ABL does not meet critical knowledge points in its test program.

The greatest hurdles to develop an operational ABL capability are:

—Flight test of beam control and atmospheric compensation lasers against a cooperative airborne target.

—Integration of high energy laser modules with the modified Boeing 747 aircraft in preparation of a lethal shoot-down of a ballistic missile target.

—Maintainability—Demonstration of routine safe processes for handling of corrosive on-board chemicals for extended flights.

—Reliability of optical system performance, including compensation for atmospheric effects, aircraft induced optical jitter, and ensuring high beam quality in an operational environment.

—Realization of producing additional ABL units within cost and schedule to demonstrate readiness for weaponization.

The greatest hurdles to develop an operational Kinetic Energy Interceptor capability are items such as booster fly-out meeting the high performance, high maneuverable requirements, the trapped-ball thrust vector control, or the ability to get and process data in a operationally useful timeline as potential technical hurdles for KEI. Additionally:

—Maintaining flexibility to integrate with Multiple Kill Vehicle capability in the future and/or using the KEB as a replacement booster for our other kinetic energy components;
—Maintaining options to develop a land-mobile launcher and fire control system as well as an option for a sea-based capability;
—Mitigate critical risk areas prior to making full budget commitments;
—Flight test of high acceleration booster.

QUESTIONS SUBMITTED BY SENATOR BYRON L. DORGAN

AIRBORNE LASER

Question. When I visited the Airborne Laser program at Kirtland AFB in January 2000, I was told that the Airborne Laser program was on schedule to do a lethal shoot-down in 2003 and that the first aircraft of a seven-aircraft fleet would be deployed in 2007. Now the first shoot-down attempt is scheduled for 2009 and there seems to be no plans for deploying the system.

Can you explain to me in layman's terms what has caused the program to slip so much?

Answer. In January 2000, the Airborne Laser (ABL) Element of the Ballistic Missile Defense System (BMDS) was scheduled to conduct lethal shootdown in 2003 and to deploy the first of a seven-aircraft fleet in 2007. However, the ABL Element has evolved considerably since 2000 in response to technical and programmatic challenges in developing this powerful, revolutionary, speed-of-light weapon system. Major adjustments to the program and its schedule have arisen primarily from:

—Technological complexity of the program's revolutionary capabilities: a high-power chemical laser and associated beam control optics on a flying platform;
—Risks associated with rapid prototyping during the early part of the program;
—Prior to 2004, programmatic focus on a single objective of shootdown, rather than incremental successes in proving technology and capability (i.e., knowledge points); and
—Unforeseen technical discoveries during development, integration and test, especially during hardware/software integration.

In 2004, the MDA Director refocused the ABL Element and directed the use of an incremental, knowledge-based acquisition approach, a change which shifted lethal demonstration from December 2004 to late 2008. The ABL Element has recognized more efficiency both in terms of schedule and costs as a result of this change. Technical discoveries since the 2004 restructure have only recently pushed the projected shootdown date to 4QFY09.

ABL is on the cutting edge of technology in almost every aspect of its development. Each component of the ABL has overcome significant technical challenges, often through the invention of "first-ever" technological achievements. Moreover, the rapid prototyping approach prior to the 2004 restructure offered the prospect of quick operational capability but also carried a higher risk of re-design and rework as many processes were attempted in parallel rather than in serial. The new restructured approach slows the development process down, but also significantly reduces risk. After all, the integration of the laser, optics, and software on a flying platform represents a level of complexity never before attempted in an airborne optical system.

In summary, the ABL Element of BMDS is successfully developing a revolutionary, speed-of-light capability that will prove invaluable to the nation's defense against ballistic missiles and will establish a role for Directed Energy weapons in the future defense of the United States.

CRUISE MISSILE DEFENSE

Question. What capabilities do the ballistic missile defense systems that you are developing offer for defending against cruise missiles?

Answer. The Ballistic Missile Defense System (BMDS) currently under development has been designed for defense in depth against short-, medium- and long-range ballistic missiles. Some of the elements designed for short- and medium-range ballistic missile defense also provide a capability for cruise missile defense. Chief

among these are the Patriot Air and Missile Defense System and the Aegis Weapon System, upon which the Aegis Ballistic Missile Defense capability is built.

The Patriot Air and Missile Defense System, being procured by the Army, provides a capability to detect, track and engage aircraft, cruise missiles, and tactical ballistic missiles in their terminal phase. These different target types can be engaged simultaneously. A Patriot Fire Unit is deployed with an AN/MPQ–53/65 phased array radar, an Engagement Control Station, and multiple missile launchers. Each launcher contains up to sixteen Patriot PAC–3 missiles. While the fly-out of the PAC–3 missile limits Patriot engagements to fairly short ranges, a Missile Segment Enhancement currently under development by the Army will significantly increase the engagement ranges for all target types. This enhancement will form the basis for the Medium Extended Air Defense System (MEADS), being jointly developed by the United States, Germany and Italy, which will also have the capability to engage aircraft, cruise missile and ballistic missile targets.

The Aegis Weapon System, deployed on Aegis-class Cruisers and Destroyers, also provides the capability to detect, track and engage aircraft, cruise missiles and ballistic missiles. These targets can be engaged simultaneously, as was demonstrated in the recent FTM–11 test of the Aegis Ballistic Missile Defense system. Unlike Patriot, Aegis is capable of engaging ballistic missiles in the ascent, midcourse and descent phases of their trajectories. The Aegis Weapon System is comprised of the AN/SPY–1 phased array radar, a Command and Decision system, and a Weapon Control System, capable of controlling the launch of multiple Standard Missiles from vertical launch cells. Different Standard Missile variants are currently used for the engagement of air and ballistic missile targets. The SM–2 Blk III and Blk IV missile variants developed by the Navy are used for the engagement of aircraft and cruise missiles, while MDA-developed variants to the SM–3 missile are used for the exoatmospheric engagement of ballistic missiles. Recently, MDA has funded modifications to the SM–2 Blk IV missile which will provide an endoatmospheric Sea-Based Terminal defense against ballistic missiles, making it dual-use for both air and ballistic missile targets. In addition, a new missile variant under development by the Navy, the SM–6, will replace the SM–2 for defense against aircraft and cruise missiles, and is under consideration for use by MDA as part of the Sea-Based Terminal ballistic missile defense capability.

The Missile Defense Agency has recently been tasked by Congress to assess candidate architectures for the defense of the U.S. Homeland against asymmetric threats comprised of cruise missiles or short-range ballistic missiles launched from a ship off the U.S. coastline. Some of the elements of the BMDS described above would most likely have a role in such an architecture. In particular, while additional sensors would most likely be needed to detect and track low-flying cruise missiles over wide areas, the Patriot PAC–3 and the SM–6 Standard Missiles could potentially provide the engagement capability needed to counter both the asymmetric cruise and ballistic missile threats.

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

COST

Question. A November 2006 report by the Congressional Budget Office states that the annual cost of missile defense could reach $18 billion by 2016. Is this an accurate assessment? If so, how can you justify spending so much on national missile defense given the number of national defense priorities we face? If not, what is a more realistic assessment and where did the Congressional Budget Office go wrong?

Answer. The CBO estimate for total investment in missile defense programs for 2016 was about $15 billion and the estimate was based on carrying out all projected development and acquisition programs. The CBO noted that if cost risk is taken into account, the amount "might be about $3 billion higher each year."

It will be several years before the Department of Defense Comptroller issues official fiscal guidance to MDA that includes fiscal year 2016. However, even without seeing future year fiscal guidance, it is safe to say that we do not anticipate our fiscal requirement for fiscal year 2016 will approach $18 billion as the recent CBO report suggests. We believe that the Department will likely maintain MDA's current "top line". Accordingly, this would amount to a funding level of approximately $10–$11 billion for fiscal year 2014 and beyond. Within this top line constraint, the Director, MDA, would recommend to the Department leadership the best course of action for balancing investments across the missile defense program that would allow us to continue to meet the priorities of the President, the Department, the Congress, and the Warfighter.

PERFORMANCE AND TESTING

Question. In March 2005, you were quoted as asserting that "We could certainly shoot down an incoming missile if we needed to" with the ground-based mid-course (GMD) system. Is that still your assessment?

Answer. Yes, that is still my assessment for threats launched from North Korea to the United States. On July 4, 2006, North Korea did launch seven missiles capable of striking our allies and deployed forces in the Western Pacific, and also launched a Taepo Dong 2 long-range missile believed to be capable of striking the Western United States. Our confidence in our assessment stems from the fact that we have successfully completed numerous ground tests, to include hardware in the loop, culminating in a flight test (FTG–02) that demonstrated a representative engagement.

Question. We have deployed a missile defense system without any operational testing of the system. The system is not on alert. Is that accurate?

Answer. Currently the fielded Ballistic Missile Defense System (BMDS) is not on alert at all times, but it is available to be placed on alert as demonstrated when we converted the system to alert mode prior to North Korea's missile launches on July 4, 2006. Transition to alert status is periodically exercised when STRATCOM conducts unannounced system readiness demonstrations. There is no need to keep the BMDS on continuous alert because it is continuously subject to recall, in response to changes in real world events, based upon changes in defense readiness conditions specified by U.S. Strategic Command.

The fielded BMDS has been subjected to operationally-realistic combined developmental and operational testing, and we work closely with the Director, Operational Test & Evaluation, Operational Test Agencies, and Combatant Commanders to incorporate operational test objectives and include operational personnel, to the maximum extent possible, in all of our flight tests. We also work together to characterize the effectiveness and readiness of the system at every stage in its development and fielding.

Testing under operationally realistic conditions is an important part of maturing the system. We have been fielding test assets in operational configurations in order to conduct increasingly complex and end-to-end tests of the system. Our flight tests are increasing in operational realism, limited only by environmental and safety concerns.

For example, in September 2006, we conducted a long-range intercept flight test that exceeded our objectives. That complex test involved an operationally configured interceptor launched from an operationally configured silo at Vandenberg Air Force Base, operational sensors, and operationally trained crews manning the fire control consoles. The test demonstrated the functionality of the Exo-atmospheric Kill Vehicle and the ability to engage a threat-representative target using the Upgraded Early Warning Radar at Beale Air Force Base in California. After the kill vehicle acquired the target, launched from the Kodiak Launch Complex in Alaska nearly 3,000 km away from the engagement zone, it successfully intercepted it. This was our most operationally realistic, end-to-end test of the system involving the Ground-based Midcourse Defense element to date.

Based on the many tests we have conducted to date, we maintain our confidence in the Ballistic Missile Defense System's basic design, its hit-to-kill effectiveness, and its inherent operational capability.

Question. The system was put on alert when North Korea conducted missile tests in July 2006. At that time, the Missile Defense Agency stated: "we currently do not have a capability to concurrently maintain the [Ballistic Missile Defense System] in full operational mode while simultaneously developing, testing, or training on the system." In other words, the Missile Defense Agency cannot walk and chew gum at the same time. If we have the system on alert, we have to stop testing, development, and training. Is that still your assessment? If it is, would you agree that it calls into the question the whole notion of "spiral development", that is fielding a system before it has been actually been operationally tested?

Answer. The United States has the ability to put a Ballistic Missile Defense System (BMDS) on alert today because of the capability-based, spiral development acquisition approach the Missile Defense Agency (MDA) has followed since 2002. This approach leverages collaboration with the warfighter community throughout development and testing to the point where we transition or transfer militarily useful capabilities to the operators.

For the first time in the history of the United States when the North Koreans launched several ballistic missiles last summer, we had the capability of defending our people against a long-range missile.

The issue of testing and training while the BMDS is in operational mode is complex and involves safety considerations as well as other technical matters. We are actively addressing this issue by developing the capability to conduct Concurrent Test, Training, and Operations. This capability will allow Combatant Commanders to keep the system in operational mode while we test, train, and make improvements to the system. Our spiral development strategy has allowed us to field an initial capability in record time and to improve that capability over time. Without spiral development, we would not have had any capability fielded last July.

Testing under operationally realistic conditions is an important part of maturing the Ballistic Missile Defense System (BMDS). MDA is using a combined Developmental and Operational Testing (DT/OT) approach that uses Operational Realism criteria developed by MDA and Director, Operational Test & Evaluation (DOT&E). In fact, MDA has been fielding test assets in operational configurations to provide an initial capability while allowing us to conduct increasingly realistic and complex end-to-end tests of the system.

Question. Is it your view that the American people are, at this moment, safer from a ballistic missile attack with a national missile defense system that is not on alert and has not been operationally tested?

Answer. I believe the American people are safer at this moment because we have in place today a limited defensive capability to engage, with a high degree of confidence, a North Korean intercontinental ballistic missile. Prior to December 2004, the United States had no capability in place to intercept a North Korean warhead and prevent it from detonating in or over an American city. With the deployment of an initial defensive capability just under three years ago, we have begun to close a gaping hole in our defenses.

We are able to monitor global missile launch activities continually using national intelligence, reconnaissance, surveillance and tracking assets, which are able to provide significant data on announced and unannounced launches and support missile defense readiness. We are able to focus many of these assets on countries of greatest concern, and, based on the commendable record of reporting from the Intelligence Community to date, I believe that we will have reliable, timely, and responsive indications and warning of potential and imminent ballistic missile launches out of North Korea.

We demonstrated this past summer that we are able quickly to activate the Ballistic Missile Defense System and prepare it for emergency operations. We worked closely with the U.S. Strategic, Northern, and Pacific Commands, the Intelligence Community, and our allies during this real world event to ensure that the system was ready to engage the North Korean long-range ballistic missile, if necessary.

The system available for emergency use today has undergone significant testing, with our most recent tests focused on demonstrating the functionality of the system under operationally realistic conditions. Over the years we have tested many of the hardware and software components of the Ground-based Midcourse Defense (GMD) system. In the September 2006 test of our GMD long-range defense capability, we used an operationally configured interceptor launched from an operationally configured silo at Vandenberg Air Force Base, operational sensors, and operationally trained crews manning the fire control consoles. Continuing our close working relationship with the warfighter community, operational test agencies, and the Pentagon's Director of Operational Test and Evaluation, we will configure the next test and subsequent tests of the GMD element, to similarly mirror a realistic operational event and feature greater test complexity. The growth in our confidence in this system's effectiveness is directly tied to our ability to practice with it in operationally realistic ways.

We ought not discount the deterrence and dissuasion effects of what we have deployed. By fielding a system we can put on alert on very short notice, we deploy a defensive capability, the performance of which the enemy cannot possibly know with any degree of confidence. Having a system that can be activated shifts a portion of the risk to the enemy.

Question. The Ground-based Midcourse Defense system (GMD) has only intercepted a target in 6 out of 11 highly scripted attempts. When is the next intercept attempt? Will it use countermeasures? Will any test in the near future incorporate countermeasures?

Answer. The next intercept attempt, GMD Flight Test-03 (FTG–03), is planned for May 2007 and will not use countermeasures on the target reentry vehicle. The subsequent flight test, FTG–04, is currently scheduled for September–October 2007 and test plans currently include countermeasures. However, MDA has successfully tested GMD intercepts in a countermeasure environment in the past and we are confident, based on modeling and engineering, that we will continue to do so.

(See attached two charts: GMD Flight Test Summary)

GMD Integrated Flight Test Summary
(1 of 2)

	IFT-1/1a (6/24/1997)	IFT-2 (1/16/98)	IFT-3 (10/03/1999)	IFT-4 (01/19/2000)	IFT-5 (07/08/2000)	IFT-6 (7/14/2001)	IFT-7 (12/03/2001)	IFT-8 (03/15/2002)
Test Event								
Test Objectives	• Demonstrate Boeing EKV sensor • Collect target signatures and phenomenology data • Exercise the GMD Test infrastructure	• Demonstrate Raytheon EKV sensor performance • Collect target signatures and phenomenology data • Exercise the GMD Test infrastructure	• Demonstrate EKV performance • Target complex acquisition • Track file and field of view management • Real-time on-board discrimination • Endgame performance	• Demonstrate integration of system elements and functionality • Demonstrate EKV flight test performance	• Demonstrate integration of system elements and functionality • Demonstrate KV flight test performance	• Demonstrate EKV flight test performance • Demonstrate sensor operations • BMC3 operations	• Demonstrate integration of system elements and functionality • Demonstrate sensor operations • Demonstrate BMC3 operations • Demonstrate KV flight test performance	• Demonstrate integration of system elements and functionality • Demonstrate sensor operations • Demonstrate BMC3 operations • Demonstrate KV flight test performance
Test Results	• IFT-1 No Test due to power supply anomaly • IFT-1A successful seeker fly-by and data collection Simulated	• Successful seeker fly-by and data collection Simulated	• Successful intercept • Successful system test	• Unsuccessful intercept due to seeker anomaly • Successful integrated system test up to intercept	• Unsuccessful intercept due to no separation of booster / interceptor • Successful integrated system test up to separation	• Successful intercept	• Successful intercept • Successful system test	• Successful intercept • Successful system test
	Success	Success	Success	Test Failure	Test Failure	Success	Success	Success
	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid	MRV w/Penaid

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GMD Integrated Flight Test Summary (2 of 2)

	IFT-9 (10/14/2002)	IFT-10 (12/11/2002)	IFT-13B (01/21/2004)	IFT-13C (12/15/2004)	IFT-14 (02/13/2005)	FT-04-5 (09/26/2005)	FT-1 (12/13/2005)	FTG-02 (09/01/2006)
Test Event								
Test Objectives	• Demonstration integration of system elements and functionality • Demonstrate sensor operations • Demonstrate BMC3 operations • Demonstrate KV flight test performance	• Demonstration integration of system elements and functionality • Demonstrate sensor operations • Demonstrate BMC3 operations • Demonstrate KV flight test performance	• Characterize booster/ kill vehicle environments • Engage a simulated target • Demonstrate integration of system elements and functionality • Demonstrate CLE and OBV performance capability • Demonstrate GFC/C Ops	• System phenomenology test • Target launched from Kodiak Launch Complex (KLC) • Exercise GBI Engage On Cobra Dane surrogate • Demonstrate GBI Engage On Aegis BMD (simulated intercept post-test) • OBV booster • Exercise IDT	• Demonstrate hit-to-kill with improved kill vehicle • Target launch from Kodiak • Exercise GBI Engage On Cobra Dane surrogate • OBV booster	• Collect data to support verification of GBI Engage On Cobra Dane ESG: - Launch sensor verification - Surveillance/initial track - Engagement sppt - Sensor • Long-Range Air-Launched target • Simulated GBI	• Demonstrate GMD can launch GBI and deliver EKV to desired point • Demo OVV/EKV separation • Demo EKV DACS and cryo operation • Demo EKV booster-aided navigation • Demo Comm event 1 and EKV divert/ Step Stare • Demo GS software engagement planning	• Demonstrate ability of Beale UEWR to provide weapon task plan • Demo Beale UEWR track and classification data in message interfaces • Demo GMD readiness functionality, transition to alert, planning ops, sensor tasking, engagement ops • Collect M&S data
Test Results	• Successful intercept • Successful system test	• Unsuccessful intercept due to no separation of booster /interceptor (Not related to IFT-5 failure) • Successful integrated system test up to separation	• Successful GBI/OBV operations • Successful integrated system test	• Unsuccessful missile launch due to OBV BIT failure • All other system objectives through WTP generation were successful	• Unsuccessful missile launch due to GBI abort just prior to launch • All other system objectives through WTP generation were successful	• Successfu V&V data for M&S anchoring • Risk reduction for Cobra Dane ESG for future flight tests	• Successful demonstration of OBV to support future flight tests and of GMD system integration, interface and performance	• Successful demo of GMD GFC ability to generate a real-time weapon system task plan using Beale UEWR and of West Coast infrastructure
	Success	Test Failure	Success	Test Failure	Test Failure	Success	Success	Success
	MTRV w/Penaid	MTRV w/Penaid	MTRV (Simulated)	GROW w/Dynamics	GROW	LRALT	STARS/GROW (Simulated)	STARS/GROW

Question. Why is there no operational testing planned? Isn't it useful to test a system under operationally realistic conditions, i.e., operational testing, to determine the true effectiveness of the system?

Answer. MDA has conducted operationally realistic tests in the past and plans to conduct additional operationally realistic tests in the future. Testing under operationally realistic conditions is an important part of maturing the Ballistic Missile Defense System (BMDS). MDA has been fielding test assets in operational configurations primarily to provide an initial capability and to conduct increasingly complex and end-to-end tests of the BMDS.

MDA has an Integrated Master Test Plan (IMTP), which emphasizes operationally realistic test and criteria as directed by congressional language. This plan is revised annually in coordination with the Department's Director, Operational Test and Evaluation. The plan will continue to expand on the combined Developmental and Operational Test (DT/OT) approach which focuses on increasing operational realism as we move from subsystem to fully integrated system-level testing for each block of fielded capability. The testing progression that we have defined in the IMTP builds upon increasing levels of operationally realistic scenarios, targets, and warfighter interaction. Every Ballistic Missile Defense System ground and flight test will include operational test objectives to provide data for an operational assessment.

Using criteria established by the Agency's system engineers and our warfighters, all system ground and flight tests provide data that we and the operational test community use to verify the system's functionality and operational effectiveness. Our flight tests are increasing in operational realism, limited only by environmental and safety concerns. Each system test builds on the knowledge gained from previous tests and adds increasingly challenging objectives, with the goal of devising scenarios that test elements of the system from end-to-end. This spiral test approach increases knowledge of, and confidence in, the system performance while maintaining safety and minimizing artificiality.

For example, in September 2006, we conducted a long-range intercept flight test that exceeded our objectives. That complex test involved an operationally configured interceptor launched from an operationally configured silo at Vandenberg Air Force Base, operational sensors, and operationally trained crews manning the fire control consoles. The test demonstrated the functionality of the Exo-atmospheric Kill Vehicle and the ability to engage a threat-representative target using the Upgraded Early Warning Radar at Beale Air Force Base in California. After the kill vehicle acquired the target launched out of the Kodiak Launch Complex in Alaska nearly 3,000 km away from the engagement zone, it successfully intercepted it. While it was not hooked into the system, we also demonstrated the powerful contributions the Sea-Based X-band radar can make in the areas of tracking and discrimination. This was our most operationally realistic, end-to-end test of the system involving the Ground-based Midcourse Defense element to date.

Question. If we are concerned about the treat posed by ballistic missiles, why is the system not on 24/7?

Answer. [Deleted.]

Question. What specifically is the time frame for researching and developing the two-stage interceptor that the Missile Defense Agency wants placed in Easter Europe? What is the testing schedule? What level of reliability must it meet before it will be deployed? What will happen if the European nations decide not to accept missile defense interceptors?

Answer. The interceptor planned for deployment in Europe is a 2-stage configuration of the currently deployed and flight-tested 3-stage booster at Fort Greely and Vandenberg Air Force Base. The booster contractor will complete design modifications to eliminate the third stage rocket motor and repackage the booster electronics that were located on the third stage. Additionally, navigation and guidance software changes will enable the interceptor to perform mission profiles for two stages of flight versus three. The common components between the 2-stage and the 3-stage booster have undergone significant, ground, flight, and qualification testing as part of the 3-stage development effort. Because the 2-stage interceptor planned for Europe has fewer components than its 3-stage predecessor, the planned 2-stage variant is a less-complex version of the successfully tested and fielded 3-stage interceptor.

The GMD 2-Stage development activity has started and a Program Critical Design Review is scheduled to occur in December of 2008. Two flight tests will be conducted, both from Vandenberg Air Force Base in California, prior to deploying interceptors at the European Site. The two flight tests include a booster verification flight with an Exo-atmospheric Kill Vehicle (EKV) mass simulator, scheduled for the fourth quarter of fiscal year 2010, and an integrated flight test with an EKV and a threat-representative target vehicle scheduled for the second quarter of fiscal year

2011. The Ground-Based Midcourse Defense (GMD) Fire Control (GFC) and Command and Launch Equipment (CLE) software adapted for the 2-stage interceptor will also be included in the 2-stage intercept flight test.

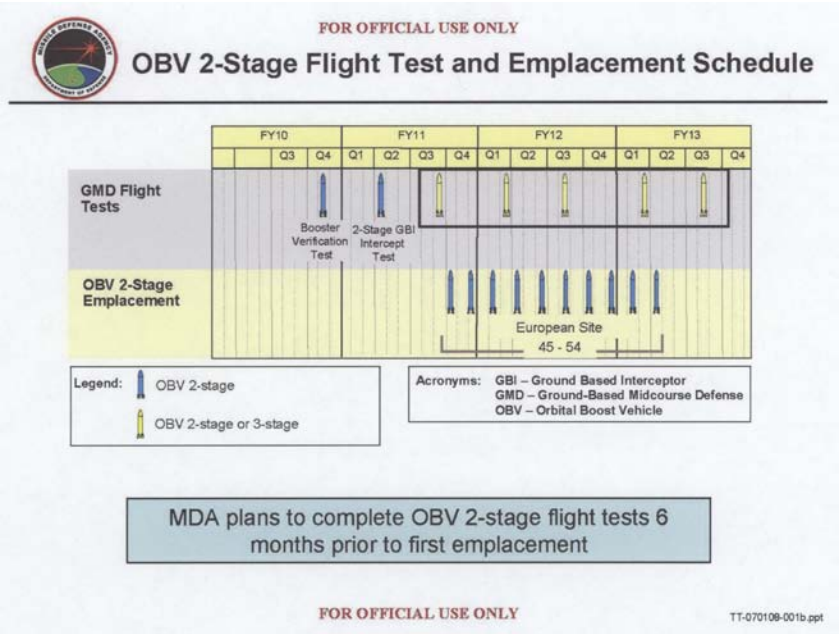
The Missile Defense Agency has identified and is currently working to mitigate risks for 2-stage interceptor development. Overall, the development and fielding for the 2-stage interceptor is low risk. The most noteworthy risks are with the software changes and integration required with the 2-stage interceptor, the CLE, and the GFC in order to optimize the interceptor's performance envelope. These risks will be mitigated through our ground and flight test programs.

Booster modifications (3-stage to 2-stage) are neither uncommon, nor unprecedented. In fact, the Payload Launch Vehicles (PLVs) flown in the GMD program's first ten Integrated Flight Tests (January 1997 through December 2002) were 2-stage variants of the standard 3-stage Minuteman boosters. So, the Missile Defense Agency has successful prior experience in modifying 3-stage boosters to fly 2-stage missions.

The non-recurring engineering funding for the GMD 2-Stage development totals $15 million and is located in the Ground Based Interceptor portion of project 0008 of the GMD Program Element. Boeing and its subcontractor Orbital Sciences began working 2-stage activities February 23, 2007.

The 2-stage interceptor reliability will be demonstrated through rigorous component qualification, integration testing, ground testing, and flight testing.

Interceptor deployment into the European Site is scheduled for the fourth quarter of fiscal year 2011 through the second quarter of fiscal year 2013. A detailed schedule is presented in the attachment. If the decision were made not to deploy GBI's 45–54 in Europe, we could use those interceptors at Fort Greely.



EFFECTIVENESS

Question. In March of 2003, Edward "Pete" Aldridge, who was then the undersecretary of defense for acquisition, technology and logistics, testified before the Senate Armed Services Committee that the ground-based interceptor system would be 90 percent effective. On July 21, 2005, you stated that there is a "better-than-zero chance of successfully intercepting, I believe, an inbound warhead." Can you explain the differences in your assessments? Since you made that statement, have our chances improved at all?

Answer. Since I made that statement, we have made substantial progress in developing testing and fielding an integrated, layered Ballistic Missile Defense System (BMDS). As commentary on our progress, I would point to testimony by the Direc-

tor, Operational Test and Evaluation on March 27, 2007 that the "BMDS has demonstrated a limited capability against a simple foreign threat" and that "MDA's ground test program was active, robust, and disciplined, demonstrating BMDS capability and interoperability." And as our testing and fielding continues, our confidence in the reliability and maintainability of the BMDS increases. The BMDS is on track to reach its specification values in the 2010–2012 timeframe. This means the system effectiveness would be in the range of 90 percent for certain threat class and launch locations. Our current system capability against North Korean threats ranges from 80 percent-90 percent for the defense of the United States. This is defensive capability we have not previously had and one which the warfighters have deemed useful to have as we continue testing and progress toward planned system effectiveness.

Question. Will we ever come close to 100 percent? How much will it cost to get there? Where will we be at the end of this fiscal year?

Answer. Complex weapon systems rarely achieve 100 percent effectiveness. Nevertheless, the GBI element of the Ballistic Missile Defense System is highly effective in performing its mission since we commit two interceptors to every threat missile in order to approach 100 percent effectiveness. At the end of the fiscal year with our current shot doctrine, we achieve greater than 90 percent effectiveness for the interceptor. In addition, the GBI is a component of a layered BMDS which will allow for even greater performance. Furthermore, over the past five years we have made substantial progress in developing, testing, and fielding an integrated, layered Ballistic Missile Defense System (BMDS) to defend the United States, our deployed forces and our Friends and Allies against ballistic missiles of all ranges in all phases of flights. As our testing and fielding continues, our confidence in the reliability and maintainability of the BMDS increases.

Question. Do you believe that our program has served as a deterrent on the nuclear weapons aspirations of either the Iranian or the North Koreans?

Answer. The threats posed by rogue nations such as Iran and North Korea continue to challenge our notions of deterrence and defense. Surprise—strategic, tactical, and technical—is an expected feature of today's security landscape. While deterrence remains the cornerstone of our strategy, we recognize an increased risk that deterrence may fail. The actions of North Korea and Iran this past year demonstrate the determination of these rogue regimes to achieve a ballistic missile capability and potentially weapons of mass destruction to further aggressive ends. Under such circumstances, missile defenses are highly desirable as a hedge against the failure of deterrence. As the robustness of the capability fielded increases, we expect that the deterrent effect of this initial capability will only increase.

SPACE TEST BED

Question. The Missile Defense Agency has requested $10 million for the Space Test Bed. What does the system architecture look like? What would prompt you not to go forward with this program? Do you agree that this may amount to the weaponizing space? Would it compel other countries to move forward with their own systems?

Aanswer. The Space Test Bed is not an acquisition program with a set architecture. It is a proving ground for concepts and technologies that might some day be integrated into a space-based missile defense layer should the data indicate feasibility (survivable, affordable, deployable, operable) and if future policy decisions permit. Exploration of alternative implementation architectures is a critical part of the Space Test Bed.

The Space Test Bed is not an acquisition program. It is a proving ground for determining the feasibility of concepts and technologies. Activities would cease if undeniable showstoppers were discovered through analysis, experimentation and demonstration or if significant breakthroughs in global terrestrial engagement made space defenses unnecessary.

No, we do not. Space "weaponization" arguments are not helpful, due to the complexities in defining what constitutes a "space weapon," as well as the inability to identify meaningful and verifiable compliance mechanisms without artificially limiting peaceful and practical uses of space.

The concept of the space test bed as a vehicle to conduct research and development of advanced technologies for space is consistent with the existing legal regime, based primarily on the 1967 Outer Space Treaty and with the President's recently-released National Space Policy. The Department has not made a decision to pursue space-based interceptors. However, should it consider deploying missile defense interceptors in space in the future, the debate will be greatly improved by a quantitative understanding of the issues.

Space based defenses are inherently global and could serve the interest of mutual security. There may be powerful incentives to develop space based capabilities within the framework of international cooperation.

QUESTIONS SUBMITTED BY SENATOR TED STEVENS

Question. Over a year ago, the graham panel recommended intensifying your flight and ground testing, while recently the Inspector General pointed out issues with your network communications security. How has your confidence in our deployed system, including the interceptors Fort Greely and Vandenberg, changed? Your plan calls for only one ground based missile defense intercept test in fiscal year 2006; are you comfortable with that level and rate of testing?

Answer. The Missile Defense Agency's confidence in our deployed BMDS is growing. If the deployed system were called upon in an emergency we believe that it would work based on the testing we have conducted to date. Recent tests conducted over the past year bolster our confidence as we have successfully flown the operationally configured interceptor. We hope to gain further confidence in our system's capability when we conduct an intercept flight test with an operationally configured GBI later this year.

We are successfully executing our plan of continued laboratory and distributed asset testing at the component and system level, and are conducting a regimented flight test schedule with well-defined entrance and exit criteria in accordance with the recommendations of the Independent Review Team (IRT) and the Mission Readiness Task Force (MRTF). We have instituted a stringent pre-mission ground test program prior to our Ground Based Midcourse Interceptor flight test missions which allows us to fully exercise the ground components at Fort Greeley and Vandenberg prior to a flight test event. In addition, we have successfully demonstrated the ability to launch, fly and separate the Ground Based Midcourse Interceptor's Exo-atmospheric kill vehicle, thereby validating the modifications we made after previous flight tests. We have also recently conducted live tests of other key BMDS assets demonstrating the system's ability to detect and track live targets in flight using operational sensors, operational networks, and our operational battle management and fire control nodes.

Our disciplined path to returning to a flight program required specific technical criteria to be met before the flight test could occur. This approach limited us to one intercept flight test in fiscal year 2006, but provided us with key insights to bolster confidence in each and every subsequent event. We plan to maintain this strategy as we strive to increase the flight test tempo in subsequent years, improve integration of Information Assurance (IA) Controls, and believe that this strategy helps balance the technical risks with additional confidence that comes from testing in more stressful intercept environments.

Concerning the Department of Defense Inspector General (DOD IG) report on the Ground Based Midcourse Defense Communications Network (GCN), MDA is confident that the GCN will continue to perform safely, securely, and efficiently when called upon to defend this nation, our friends and allies against missile threats. The IG recommendations are matters that need attending to, and are being appropriately addressed.

GROUND-BASED MISSILE DEFENSE

Question. I'm pleased that the airborne laser has made technical strides during the last year. Will this program have the funding to meet its key milestones in 2007?

Answer. The program has sufficient funding to accomplish the projected milestones in 2007. ABL is a high-risk/high-payoff program based on cutting edge technology in developing and integrating advanced optics and lasers on a flying platform. The program has made significant progress by successfully demonstrating long-duration lasing at lethal power levels in ground tests and completing flight testing of the integrated beam control/fire control and battle management systems on board the ABL prototype aircraft. The program is following a very aggressive schedule to complete both ground and flight tests of the beacon and tracking illuminators (including demonstration of atmospheric compensation) before the end of CY06, and completion of low power system testing in CY07, while the high energy laser component is refurbished in preparation for installation on board the aircraft in CY07. All these efforts are leading up to a lethal shoot-down of a ballistic missile in the 2008 timeframe.

Question. Fielding Aegis and Ground Based Midcourse Defense are priorities for this committee. Can you assure this committee that the Missile Defense Agency has

adequate resources allocated to the testing, fielding and operational aspects of the current system before embarking on the development of new capabilities?

Answer. I share your views on the importance of fielding the Ground-based Midcourse and Aegis BMD elements of the Ballistic Missile Defense System (BMDS).

In fiscal year 2007 we plan to continue the incremental fielding and sustainment of Ground-based Midcourse Defense interceptors; additional SM–3 missiles and upgrades to Aegis BMD ships; and the supporting sensors, command, control, battle management and communication capabilities required to integrate these interceptors into the BMDS. We have been steadily increasing the operational realism of Aegis BMD flight tests leading to deployment of a certified tactical capability later this year. In Aegis BMD, the Navy's Operational Test and Evaluation force is conducting concurrent testing as part of Aegis BMD flight test missions. We will also be pursuing a comprehensive and integrated approach to increasing the operational realism of our GMD and BMDS flight tests as well as making our ground testing program more robust. At the same time, we are not wavering from our commitment to sustaining these systems once they are in the field.

The resources included in our fiscal year 2007 President's Budget request, as well as throughout the FYDP, are adequate to support our fielding, sustaining and testing commitments. Currently, we are fielding missile defense assets about as fast as we can and I can assure you that our budget request represents an appropriate balance between providing near term missile defense capabilities and preparing for the emerging threats of the future through our evolutionary development programs.

Question. The radar at Shemya and the sea based X-Band are key elements of the ground based missile defense system. As such, they are likely high value targets in the initial phases of an attack. Does the Missile Defense Agency plan to protect these assets from our adversaries? Can you provide us that plan in a classified session?

Answer. The overall protection strategy for the Cobra Dane Radar on Shemya Island, Alaska and the Sea-Based X-Band (SBX) is based upon an assessment of the current threat, the application of security measures to deter identified threats and appropriately protect the radar and personnel, and the Combatant Commanders planned response to actual threats.

Cobra Dane

U.S. Strategic Command (USSTRATCOM) Strategic Directive 538–2, "Global Ballistic Missile Defense Systems (GBMDS) Physical Security Program" directs protection standard at the SSL–A level. This specifies protection commensurate with assets for which loss, thefts, destruction or compromise would cause great harm to the strategic capability of the U.S. Cobra Dane does not currently meet all SSL–A protection requirements. Remoteness of the asset, severe weather conditions, and cost vs. risk are considerations being evaluated towards a decision to properly updated existing security. MDA is working with USSTRATCOM and Pacific Air Forces (PACAF) to conduct a security assessment and develop a risk mitigation plan to identify security systems suitable for the Eareckson environment, including enhanced security for the Cobra Dane radar.

SBX

SBX is currently protected as a System Security Level-A asset in accordance with DEPSECDEP direction, as implemented by U.S. Strategic Command (USSTRATCOM) Strategic Directive 538–2. USSTRATCOM has endorsed MDA security and force protection measures as consistent with 538–2 for SSL–A.

Geographic Combatant Commands (GCC) are responsible under the Unified Command Plan (UCP) for force protection oversight of SBX–1 when operating in their area of responsibility. While MDA is responsible for antiterrorism/force protection (AT/FP) of the vessel, the GCC is responsible for responding to attacks by adversaries during increased threats/wartime. Based on the Force Protection Condition (FPCON) and current intelligence, GCCs will direct assigned forces or request additional forces to protect the SBX operations, as required.

Question. Your agency is in the initial development stages of the Kinetic Energy Inteceptor, which appears to offer improved performance during boost and ascent phase engagements. For commonality, supportability, and cost have we examined all avenues of improvements, or modifications, to the existing ground based interceptors to provide this capability?

Answer. The Missile Defense Agency did examine the possibility of improving or modifying the existing Ground-Based Interceptor to enable boost and early ascent phase defenses prior to starting the Kinetic Energy Interceptors program in 2003. What we and multiple industry teams determined is that a mobile, fast-burning, high acceleration booster capability is required to meet boost/ascent phase mission

requirements. The Kinetic Energy Interceptor booster has approximately three times the acceleration of a Ground Based Interceptor with a similar payload volume and weight capacity. The Kinetic Energy Interceptor is also half the weight of a Ground Based Interceptor; its physical size (length and diameter) is constrained to allow rapid transport on a C–17 aircraft and future integration on a sea-based platform. The only way to achieve this mobile weapon capability is to design, develop, integrate and test new booster motors. The development of this unique booster vehicle capability is the primary focus of the Kinetic Energy Interceptors program through the 2008 booster flight knowledge point.

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

VALUE OF TEST RANGES TO MISSILE DEFENSE AGENCY (MDA)

Question. White Sands is perhaps the most unique installation in all of DOD and, when combined with Fort Bliss (most of which is located in New Mexico) and Holloman Air Force Base, it gives the Department a highly valuable venue for combining operations and testing.

Can you describe the value MDA places on its access to an installation like White Sands with its enormous geographic size and unrestricted airspace?

Answer. MDA values access an installation like White Sands Missile Range (WSMR) for testing of Ballistic Missile Defense (BMDS) elements due to its geographic size and airspace. However, WSMR is not well suited for MDA test engagements across multiple time-zones which are necessary to increase confidence in the whole BMDS. We continue to integrate theater and regional missile engagement capabilities into the Ballistic Missile Defense System with a strategic engagement capability demonstrated for Block 04. With its size and airspace, WSMR will contribute to the success of the BMDS in future testing involving PATRIOT integrated with Command Control Battle Management and Communications (C2BMC) and the Theater High Altitude Area Defense system (THAAD). PATRIOT testing is required to assist in maintaining the Limited Defensive Capability of the BMDS as well as the development of future Blocks of the BMDS.

Question. Does this access provide the type of realistic testing environment needed to collect accurate data for your systems?

Answer. Yes, at the developmental testing level, but not as much for operational testing:

—*Airborne Laser (ABL).*—WSMR is well suited for firing the laser in flight at diagnostic missiles during beam characterization, and for some test sorties where active laser operation is not required.

—*THAAD.*—For ground testing, THAAD will conduct a total of 26 activities comprised of tests, demonstrations and New Equipment Training/Collective Training. These activities will exercise the Launcher, Radar, and Fire Control and Communication components of the THAAD element, at WSMR and other ranges, from 2007 through 2011.

—*PATRIOT Advanced Capability (PAC)-3.*—In fiscal year 2007 and fiscal year 2008 there will be a total of two BMDS tests that use the Army's PATRIOT tests at WSMR. The first test, set for 2QFY07, will bring C2BMC and THAAD Hardware-In-the-Loop (HWIL) to exercise the latest PATRIOT and C2BMC software. MDA will collect data on communications between THAAD and PATRIOT and will test PATRIOT's ability to receive C2BMC engagement-coordination direction. For the second test, set for 1QFY08, MDA will bring C2BMC and THAAD HWIL to the PAC–2 Guidance Enhancement Missile (GEM) P6X–2 test to accomplish the same objectives. It should be noted that the Army will be conducting PATRIOT tests at WSMR in addition to MDA specific tests.

Question. How will White Sands contribute to the success of the Ballistic Missile Defense System in the future?

Answer. In Block 06 and beyond, the MDA has planned engagement sequences that include THAAD engagement on its X-band radars and on system-level tracks. The WSMR flight campaigns will contribute to proving key functionality and interfaces as the BMDS extends to integrated, layered, worldwide-defensive capabilities. Accordingly, the MDA testing program includes THAAD flight tests and Patriot flight tests to demonstrate early interoperability, then integration with the BMDS. The C2BMC element will participate in these flight tests to demonstrate the situational awareness and planning functions that are needed to conduct regional missile defense operations.

Question. A range-wide environmental impact statement has not been completed for WSMR in more than ten years. Would the Missile Defense Agency benefit from such an EIS?

Answer. A decision to conduct a range wide EIS at the Army's White Sands Missile Range would be made by the Army and White Sands Missile Range, and any value to the Missile Defense Agency would be indirect. The Missile Defense Agency (MDA) coordinates test planning at White Sands Missile Range with the Army, and as new missile tests are identified to meet our testing goals, and as the proponent of those tests, the Missile Defense Agency would initiate the necessary level of compliance with the National Environmental Policy Act for the specific action. Current planned Missile Defense Agency testing at White Sands Missile Range is compliant with the National Environmental Policy Act.

Question. What does the Missile Defense Agency need from White Sands Missile Range and New Mexico?

Answer. THAAD returned to flight testing in 2005, and the second flight test of five at WSMR occurred on May 11, 2006. The THAAD program currently plans to conduct three additional flight tests at WSMR over the rest of this year and into fiscal year 2007 before moving future testing to the Pacific Missile Range Facility (PMRF) at Barking Sands, HI, where we can conduct tests of more challenging engagement scenarios.

WSMR provides support for many other MDA flight tests via our Pacific Range Support Teams (PRST) which are teams composed of staff from multiple DOD ranges to support broad ocean area tests, and to specific MDA dedicated mobile test assets. We need the WSMR team to continue their outstanding support of our MDA PRST, providing critical mobile equipment and expertise to remote locations around the Pacific. While the WSMR geography seems substantial for tactical systems, MDA systems must demonstrate their capabilities on both a broader theater and global scale. This large-scale testing will require us to use large areas within the Pacific oceans.

MDA and DOD continually seek more commonality of testing processes and tools across the Major Ranges and Test Facility Base, to enable more efficient and flexible testing in the future. WSMR's continued support of these activities is crucial.

The C2BMC element participates in THAAD and PATRIOT testing from WSMR to achieve early demonstrations of element interconnectivity and data message transfer during live fire events. This interconnectivity testing is made easy by WSMR's SIPRNET on-range connectivity and ease of set-up and troubleshooting.

MDA's programs take advantage of a substantial amount of infrastructure and technical expertise from across New Mexico. Some of the other areas include: Holloman High Speed Test Track and WSMR for lethality and survivability testing; Kirtland Air Force Research Labs and the ABL program office support to our Directed Energy activities; and Sandia National Labs for support to our FT targets, threat analyses, survivability, among others.

SUBCOMMITTEE RECESS

Senator INOUYE. The hearing is recessed.

[Whereupon, at 11:45 a.m., Wednesday, April 25, the subcommittee was recessed, to reconvene subject to the call of the Chair.]