DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 2009

WEDNESDAY, APRIL 23, 2008

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

The subcommittee met at 10:33 a.m., in room SD–192, Dirksen Senate Office Building, Hon. Daniel K. Inouye (chairman) presiding.

Present: Senators Inouye, Stevens, Cochran, Domenici, and Shelby.

DEPARTMENT OF DEFENSE

MISSILE DEFENSE AGENCY

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

OPENING STATEMENT OF SENATOR DANIEL K. INOUYE

Senator INOUYE. On behalf of the subcommittee, I'm very pleased to welcome Lieutenant General Obering, Director of the Missile Defense Agency, and Lieutenant General Campbell, who wears three hats, Commanding General of the U.S. Army Space and Missile Defense Command, the U.S. Army Forces Strategic Command, and the Joint Functional Component Command for Integrated Missile Defense.

These distinguished gentlemen are here before the subcommittee to discuss the fiscal year 2009 budget request for missile defense.

General Obering, I've been informed that this will very likely be your last time to testify before this subcommittee as Director of the Missile Defense Agency, and I wish to thank you for your tireless service and dedication to the mission and congratulations on the many accomplishments achieved during your tenure as head of the agency.

This has been a good year for missile defense. After 25 years and over $100 billion spent, the United States finally has a system in place that could be operational, if necessary.

Now that systems like the terminal high altitude area defense (THAAD) the aegis sea-based missile defense, and the ground-based system (GMD) are showing promise, it is time to get these missile defense capabilities fielded and operational. It's time to move from research and development to fielding systems that are fully tested and capable.

We have the pillars in place to do this with GMD, aegis and THAAD. These programs require our full attention. They'll start as the basis of our missile defense capability for decades to come.

There are many issues that I hope you'll address today regarding the $9.3 billion budget request before the subcommittee, including the status of negotiations for the European Third Site, shortfalls in the target inventory, and progress in overcoming countermeasures.

And I wish to thank you both for appearing before the subcommittee and I look forward to hearing your remarks.

May I now call upon the vice chairman of the subcommittee?

STATEMENT OF SENATOR TED STEVENS

Senator STEVENS. Thank you very much, Mr. Chairman. I join you in welcoming our witnesses this morning and look forward to their testimony.

This gives us an opportunity to really catch up and be up to date with regard to the missile defense policies and changes in the program. The threat continues to increase and I think that providing combatant commanders with the defensive weapons they need to deter an attack against our homeland deployed forces is absolutely essential to our national security.

Our subcommittee has consistently supported missile defense programs with an emphasis on development, testing, fielding and improvement of effective near-term missile capability, and missile defense capabilities. I believe the subcommittee will continue to support these near-term capabilities as well as enhancing our Nation's ability to defeat the future missile threats. So we look forward to your testimony and I understand there may be a small video.

Thank you.

Senator INOUYE. Thank you very much. Senator Cochran.

STATEMENT OF SENATOR THAD COCHRAN

Senator COCHRAN. Mr. Chairman, thank you. I'm pleased to join you and Senator Stevens in welcoming General Obering and General Campbell to this hearing.

We're all well aware of the fact that ballistic missiles pose an increasing threat to our Nation, to our military forces and to our interests throughout the world. It is a disturbing reality that North Korea and Iran continue to pursue mobile solid fuel missiles capable of being launched on short notice and capable of carrying warheads with the potential for mass destruction. North Korea continues its efforts to export missiles and missile technology.

In the face of these realities, it is imperative that we provide the Department of Defense and the Missile Defense Agency in particular the resources necessary for the defense of our country and our interests against these threats.

We deeply appreciate General Obering's and General Campbell's leadership in this effort and we welcome you to the hearing.

Senator INOUYE. Senator Shelby.

Senator SHELBY. Mr. Chairman, I'd just like to echo what you've been saying here.

Welcome, General Obering, General Campbell, and tell them I believe you're on the right track. You're working hard and you've got a lot to share today and I look forward to hearing it.

Senator COCHRAN. Thank you, sir.

Senator INOUYE. Senator Domenici.

Senator DOMENICI. Mr. Chairman, I have no comments.

Senator INOUYE. Thank you, sir. And now it's my pleasure to introduce General Obering.

General OBERING. Thank you very much, sir.

Good morning, Mr. Chairman, Senator Stevens, distinguished members of the subcommittee.

I want to thank this subcommittee personally for the tremendous support that we have indeed received from you over the years. As the Director of the Missile Defense Agency, it is my role to develop, test, and initially field an integrated layered ballistic missile defense system.

For 2009, we are requesting $9.3 billion for this mission. I want to point out that approximately 75 percent is for near-term capabilities with the remainder budgeted for longer-term elements that we think are prudent to address an uncertain future.

To lay the foundation for our budget request, I would like to point out why missile defense is so critically needed. There were approximately 120 foreign missile launches last year around the world. Two countries in particular, North Korea and Iran, continue to be very troubling with their pace of missile development, testing and proliferation.

Iran's pursuit of missiles with ranges exceeding what they would need in a regional conflict, coupled with their continuing uranium enrichment, emphasizes why it's so important that we field and integrate long-range defenses with shorter-range North Atlantic Treaty Organization (NATO) capabilities in the European Theater.

Our request for 2009 builds on our record of continuing success. I am happy to report that 2007 was the best year ever in missile defense and it reflects the hard work of thousands of men and women around the country. We have now fielded two dozen interceptors between Alaska and California to address the long-range threat. We've modified 17 aegis ships for the long-range tracking mission, 12 of which are also capable of launching the 25 standard missile (SM–3) sea-based interceptors to address short-range threats that we've deployed.

We've expanded our center network and deployed additional command and control capabilities to the combatant commanders, and with NATO's recent recognition of the emerging missile threat, its endorsement of our long-range defense proposals and its tasking to propose options for shorter-range protection, we will be able to defend our deployed forces and allies in that important theater in the future with your support.

Our success is also reflected in our increasingly complex and realistic test program. With the 10 of 10 successful intercepts in 2007, we have now achieved 34 of 42 successful hit-to-kill intercepts since 2001. We have not had a major system failure in our flight test program now in over 3 years.

Two relatively recent milestones are also worth highlighting. One was the success of our allied partner Japan in their first intercept

flight test off the coast of Hawaii in December of which we and the Japanese are extremely proud; and two, we were able to modify our sea-based element to shoot down the errant satellite in February with just 6 weeks' notice. While this was not a test of our missile defense system, it does powerfully demonstrate why we need tools for an uncertain future.

Now, sir, with your permission, I would like to show you video of our test and our satellite intercept, if that's okay. What you're going to see, first of all, is the test, the terminal high altitude air defense test (THAAD), that we conducted off the coast of California—I mean, off Hawaii. Go ahead.

This occurred in April 2007 and what you're going to see is the target missile here is launched from a ship off the coast, about 250 miles off the coast of Hawaii. This was done very easily, in terms of being able to do this off a ship and that's something I'd be happy to address in questioning, and then we launched the interceptor from the island of Kauai and, Senator Inouye, I know you're very familiar with that.

This is our land-based mobile that can operate just inside and just outside the atmosphere. Here's a close up of the interceptor as it egresses the canister. Now this interceptor consists of a kill vehicle and a single booster and you'll see the fly-out of the interceptor here, a couple of different angles, and then you'll also see the separation between the booster and the kill vehicle in this next frame.

Now I want you to see how energetic this is. There's the separation and the debris. There goes the kill vehicle on its way. If you look very closely, you'll see two pieces come off the kill vehicle which are the shroud that protects its sensor and then next you'll see the kill vehicle rockets that are adjusting as the target comes into the picture from the left.

Now this intercept occurred just on the edges of space and we totally destroyed that unitary target.

Now if you go back, the next one I want to show you is our long-range test that we conducted last September. In this situation, we're trying to replicate a long-range shot from North Korea into the United States and an intercept from Alaska.

So to replicate that, we launch a target from Alaska, from Kodiak Island, that I know Senator Stevens is very familiar with, and then we launch the interceptor from California. That gives us the replication of the operational conditions that we're looking for.

This is a camera that's mounted on the aft of the target as we launch. It's part of our data collection opportunities. Now in this case, we had an operationally realistic target. We had an operational radar that gave us the initial weapons control, fire control plan. We used soldiers at the console that were not connected to the test net and we used an operationally configured interceptor that we flew out of California.

In the next shot, you're going to see the location of the interceptor on the west coast. This is identical to the configuration that we have deployed in Alaska as well as in Vandenburg. You'll notice in the close up, there's the clam shell doors of the silo opening and the egress of the interceptor.

Now this is a three-stage interceptor. It is the largest that we have in our inventory and it is the only interceptor capable of engaging the long-range missiles because of the speed involved.

We propose a two-stage version of this in which we just remove the third stage for the Poland and the European environment.

Here's the staging of the first stage and the altitude of this intercept will be hundreds of kilometers in space and, of course, that is also important when you're trying to minimize any effects on the ground.

The first thing you're going to see is the infrared of the intercept in both real and slow motion and then, very interestingly, you're going to see exactly what the kill vehicle sees and I'll walk you through that and that is, you're going to see three boxes come up and those are sensors on the kill vehicle and it's going through and if you remember that debris from the interceptor separation, we get that also with the target.

So little boxes will come up and start tracking those objects. They could be debris. They could be a third stage, et cetera. It's going through and determining what is the warhead invading on it and then you'll see the warhead come up in these two frames just before we intercept right there and right there.

So that demonstrates the ability, for example, to sort through different objects it sees and go after the warhead as part of the logic.

SATELLITE INTERCEPTOR

If you go back and then finally to the next slide, I just want to walk you through this. About 7 to 10 days before Christmas, I was called by the National Reconnaissance Office Director Scott Large and he asked for help in destroying the satellite that they had lost communication with and was coming back in with a very toxic payload that could have been potentially hazardous to humans.

It took us a couple weeks to analyze and it turned out that both the ground-based midcourse and aegis all had capability—if they were modified to go do this mission. The aegis was the easiest to modify and also represented the most flexibility and the minimum impact to our program overall, so that's why we chose that.

We didn't modify the ship system, the radar and the kill vehicle to be able to do this mission, and then on the 20th of February we launched one just north of Hawaii on the U.S.S. *Lake Erie*.

Now what I want to point out here at the bottom, we had to hit that tank. We had to hit and destroy that hydrazine tank on the satellite and so we ran through our modeling simulation, we wanted to see what happened, what were the risk of that, what were the potential possibilities of being successful.

What you see in the bottom left is a picture of the radar image. If we hit the satellite but did not hit that tank, that would not have been a success, and then if you see this, this is the prediction from our modeling and simulation of what it would look like if we hit the tank.

Now if you go ahead and click, Steve, that's the real picture that we got. So our models and sims did a pretty good job of predicting what it would look like were we successful, and if you go ahead and click on it, I'll show you very quickly, this is the video.

This was done by aegis. It was a *Lake Erie* sea-based interceptor that we had modified. One thing that's important to point out, the ship could not do this by itself. We had to feed it offboard information because the satellite was traveling too fast for that ship to be able to engage it. So we had a whole sensor network that we were using data from to inject it offboard, from offboard the ship.

There's the staging of the interceptor and then you'll see the video that we have. The first one is a Halo aircraft. That's focused on the satellite and there's the intercept and the next one is another Halo aircraft that was focused on the interceptor and I'll show you one of the real tell-tale signs we were looking for in the intercept was the presence of hydrazine right here.

This is focused on the interceptor and as you see, there will be a half-moon shape that comes up here and that was exactly what we were looking for in terms of the atmospheric interaction with the hydrazine. So from different phenomenology, we confirmed that we were successful.

Now concerning closing, I just wanted to point out that we've been able to put all of this critical capability into the hands of the warfighters so effectively and so quickly over the past several years because of the authorities that have been given to the Missile Defense Agency and the nontraditional defense acquisition approach that you have allowed us to pursue.

PREPARED STATEMENT

I want to thank you and all of you and I look forward to your questions.

Thank you.

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

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL HENRY A. OBERING III

Good morning, Chairman Inouye, Senator Stevens, distinguished Members of the Committee. Thank you for this opportunity to discuss the Department of Defense's fiscal year 2009 Missile Defense program and budget. As Director of the Missile Defense Agency (MDA), I have the privilege of leading an outstanding group of thousands of men and women who are working hard every day to develop, test and field an integrated, layered ballistic missile defense system 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. I want to thank this Committee for the support we have received for this critical defense program.

We are requesting $9.3 billion in fiscal year 2009 for missile defense. Roughly 75 percent of this request, or $7 billion, will be allocated to the near-term development and fielding of missile defense capabilities. Of this amount, $715 million is for sustaining the capabilities we already have in the field today. I also want to highlight that, as has been the pattern for several years now, we will be spending about $2 billion of the funding in fiscal year 2009 (more than 20 percent of the missile defense budget) on test activities.

The Ballistic Missile Defense System (BMDS) is daily becoming more integrated, robust, and global. The BMDS already includes fielded assets operated by Air Force, Army, and Navy units under the integrated control of Combatant Commanders. Our current, limited homeland defense against long-range ballistic missiles will soon be bolstered by additional interceptors in Alaska and the upgrade of an existing radar in Greenland to protect against enemy launches from the Middle East.

The defense of deployed forces, allies, and friends against short- to medium-range ballistic missiles in one region/theater will be buttressed by additional Standard Missile (SM)-3 interceptors, more Aegis BMD engagement-capable warships, the initial Terminal High Altitude Area Defense (THAAD) fire units, and additional sea-

based terminal interceptors. Tying these assets together will be a global command, control, battle management and communications capability.

In the near future, MDA's capability development program is expected to yield enhanced capabilities to discriminate between enemy warheads and countermeasures and options for "multiple kill" capabilities to meet future challenges. In the longer term, we will complete the development of a boost phase defense capability.

Recent flight tests are confirming technological progress and operational effectiveness for short-, medium-, and long-range defensive capabilities. In 2007, MDA and the military services executed 10 of 10 successful intercepts across all ranges of our missile defense elements.

As missile defense capabilities expand worldwide, international cooperation with allies and friends is dramatically increasing. Earlier this month the United States and the Czech Republic completed negotiations on a missile defense agreement to station a midcourse X-band radar in the Czech Republic to track ballistic missiles. Assuming we conclude an agreement with Poland and obtain congressional approval to proceed with the European Site Initiative, MDA intends to begin site construction for additional long range interceptors and the fixed-site radar to defend allies and deployed forces in Europe and expand the U.S. homeland defense against limited Iranian long-range threats. On April 3, 2008, in recognition of the increasing threat posed by ballistic missiles, all 26 nations of the North Atlantic Treaty Organization (NATO) formally endorsed the deployment of the European-based U.S. missile defense assets. NATO also committed to working with the United States to link this capability to any future NATO-wide missile defense architecture.

Also, we have undertaken substantive cooperative efforts with European, Middle Eastern, and Asian nations. With the purchase of Aegis BMD and Patriot Advanced Capability-3 assets, and with our fielding of a transportable X-band radar at Shariki, Japan is in the process of fielding a multilayered system interoperable with the U.S. system. Further, with MDA's support, the Department of Defense participated with Israel to develop an Israeli missile defense architecture that can meet threats expected in the next decade. We also held meetings with senior Russian officials and technical experts to discuss both threat perceptions and missile defense cooperation, including the potential for partnering with Russia in a joint regional architecture.

Mr. Chairman, one last point before I continue. In February the Department of Defense called on our country's missile defenses to destroy a large tank of toxic fuel onboard an out-of-control U.S. satellite about to reenter the Earth's atmosphere. The uncertainty of when and where the satellite would reenter, and the near certainty that the fuel tank would survive reentry and possibly break up on Earth, drove the urgency of this mission. Using an extensively modified SM–3 interceptor and a modified Aegis Weapon System onboard the U.S.S. *Lake Erie*, the Navy successfully destroyed the tank. The Department undertook this operation, carefully choosing an intercept altitude that would not add to the debris currently in orbit, to protect against the possible risk to life that a natural reentry of the satellite could have posed. After engagement, the toxic hydrazine dissipated in space, and, by now, most of the debris from the satellite body has burned up in the Earth's atmosphere.

This was a very successful joint mission involving the Navy, U.S. Strategic Command, the Missile Defense Agency, the National Aeronautics and Space Administration, the National Reconnaissance Office, and other national security offices. Missile Defense Agency engineers worked closely with the Navy to modify the interceptor and the Aegis weapon system for this one-time engagement. This was a case where the missile defense system was unexpectedly pushed into service and performed exceptionally well. While this stands as an example of what the nation received for its investment in missile defense, I want to be clear that it does not represent an operational anti-satellite capability. The time and level of technical expertise it took to plan and orchestrate this mission, the split-second fragility of the once-per-day shot opportunities, and the relatively low altitude of the satellite's decaying orbit did not approach the responsive and robust capability that would be needed to attack enemy space assets in wartime.

THREAT UPDATE

To lay the foundation for our budget request, let me review why missile defense is so critically needed. There remains intense interest in several foreign countries to develop ballistic missile capabilities. In fact, there were over 120 foreign ballistic missile launches in 2007, significantly exceeding what we observed in previous years. This comes on the heels of a very active 2006, during which time both North Korea and Iran demonstrated an ability to orchestrate campaigns involving multiple and simultaneous launches using missiles of different ranges. Currently, North

Korea has hundreds of deployable short- and medium-range ballistic missiles and is developing a new intermediate-range ballistic missile and a new short-range, solid-propellant ballistic missile, which it test-launched in June 2007. Iran has the largest force of ballistic missiles in the Middle East (several hundred short- and medium-range ballistic missiles), and its highly publicized missile exercise training has enabled Iranian ballistic missile forces to hone wartime skills and new tactics.

North Korea's ballistic missile development and export activities remain especially troubling. Pyongyang continues to press forward with the development of a nuclear-capable ICBM. While the firing of the Taepo Dong 2 in July 2006, launched together with six shorter-range ballistic missiles, failed shortly after launch, North Korean engineers probably learned enough to make modifications, not only to its long-range ballistic missiles, but also to its shorter-range systems. North Korea's advances in missile system development, particularly its development of new, solid fuel intermediate-range and short-range ballistic missiles, could allow it to deploy a more accurate, mobile, and responsive force. North Korea's nuclear weapons program makes these advances even more troubling to our allies and the commanders of our forces in that region.[1]

In addition to its uranium enrichment activity, Iran continues to pursue newer and longer-range missile systems and advanced warhead designs. Iran is developing an extended-range version of the Shahab-3 that could strike our allies and friends in the Middle East and Europe as well as our deployed forces. It is developing a new Ashura medium-range ballistic missile capable of reaching Israel and U.S. bases in Eastern Europe.[2] Iranian public statements also indicate that its solid-propellant technology is maturing; with its significantly faster launch sequence, this new missile is an improvement over the liquid-fuel Shahab-3.[3] Iran has reportedly bought a new intermediate-range ballistic missile (IRBM) under development by North Korea;[4] this underscores the urgent need to work with our allies in the North Atlantic Treaty Organization (NATO) to field and integrate long-range missile defenses in Europe. Moreover, Iran's development of a space launch vehicle using technologies and designs from its ballistic missiles means Iran could have an ICBM capable of reaching the United States by 2015.[5]

Syria is working to improve its ballistic missile capabilities and production infrastructure. Today Syria is capable of striking targets in Israel and Turkey, our southern NATO partner, using rockets and ballistic missiles. Syria can produce longer-range Scud variant missiles using considerable foreign assistance from countries such as North Korea and Iran.[6] So our vigilance must extend well out into the future, when the threats we face today have grown and new threats may have emerged.

NEW MISSILE DEFENSE PROGRAM STRUCTURE

We have established a new block structure to organize our program of work and present our budget. The Agency has made this change to address concerns about transparency, accountability, and oversight and to better communicate to Congress and other key stakeholders. The new approach has several key tenets:

—Blocks will be based on fielded missile defense capabilities that address particular threats and represent a discrete program of work—not on biennial time periods.

—When MDA believes a firm commitment can be made to the Congress, the Agency will establish schedule, budget, and performance baselines for a block. Block schedule, budget, and performance variances will be reported.

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[1] Oral Statement by the Director of the Defense Intelligence Agency, Lieutenant General Michael D. Maples to the Senate Select Committee on Intelligence Annual Threat Assessment Hearing, 5 Feb 2008 http://www.dia.mil/publicaffairs/Testimonies/Statement29.pdf; Current and Projected National Security Threats to the United States, Lieutenant General Michael D. Maples, U.S. Army, Director, Defense Intelligence Agency, Statement for the Record, Senate Armed Services Committee, 27 February 2007 http://www.dia.mil/publicaffairs/Testimonies/statement28.html.

[2] Statement of Lieutenant General Michael D. Maples, 5 February 2008.

[3] Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January to 31 December 2005, Central Intelligence Agency, http://dni.gov/reports/CDA%2011-14-2006.pdf.

[4] Statement of Lieutenant General Michael D. Maples, 5 February 2008.

[5] Current and Projected National Security Threats to the United States Vice Admiral Lowell E. Jacoby, U.S. Navy Director, Defense Intelligence Agency Statement For the Record Senate Armed Services Committee, 17 March 2005 http://www.dia.mil/publicaffairs/Testimonies/statement17.html.

[6] Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January to 31 December 2005, Central Intelligence Agency.

—Once baselines are defined, work cannot be moved from one block to another.

Based on the above tenets, MDA has currently defined five blocks (see figure 1). Blocks 1.0, 3.0, and 4.0 deliver capabilities for long-range defenses, while Blocks 2.0 and 5.0 deliver capabilities to address the short- and medium/intermediate-range threats.

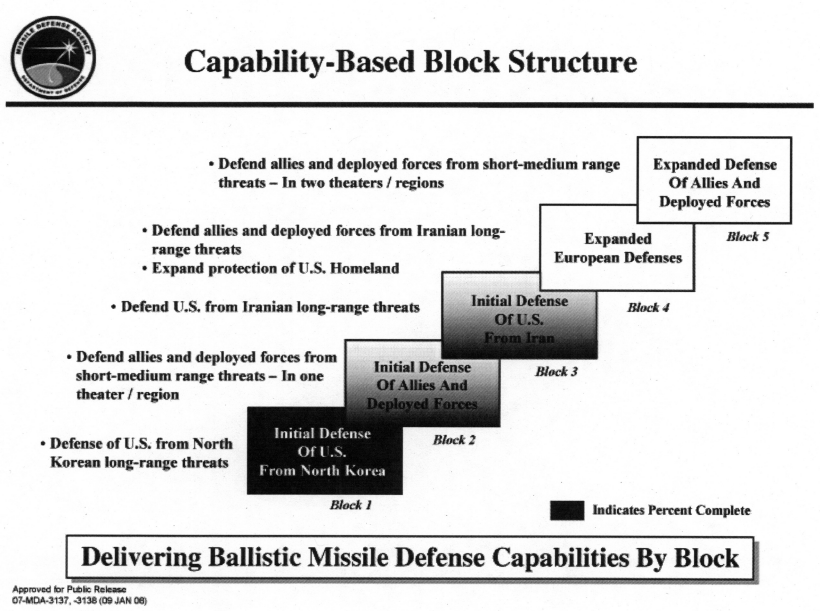

Figure 1: Capability-Based Block Structure

Future blocks (Block 6.0, etc.) will be added when significant new capabilities are expected to be fielded based on technological maturity, affordability, and need. For example, a new Block 6.0 might include enhanced defense of the United States against complex countermeasures, drawing on volume kill capabilities from the multiple kill vehicle (MKV) program, improved discrimination capabilities on our integrated sensor, command and fire control network as well as upgraded hardware and software on our weapon systems.

MDA's budget is organized through the period of the Future Years Defense Program based on the new block structure. Also, program funding that does not fit into Blocks 1.0 through 5.0 is assigned to four general categories:

—*Capability Development*.—Technologies such as the Airborne Laser, Multiple Kill Vehicle, Kinetic Energy Interceptor, Far-Term Sea Based Terminal, Project Hercules and the Space Tracking and Surveillance System, which address future challenges and uncertainties.

—S*ustainment*.—Operations and support of weapon systems, sensors, and command and fire control components.

—*Mission Area Investment*.—Activities that support multiple efforts and cannot be reasonably assigned to a specific block or capability development program (e.g., intelligence and security; modeling and simulation; systems engineering and testing cores; safety, and mission assurance).

—*MDA Operations*.—Activities that support the Agency, such as Management Headquarters and Base Realignment and Closure (BRAC).

HIGHLIGHTS OF BUDGET SUBMISSION FOR FISCAL YEAR 2009

Our priorities in the fiscal year 2009 budget submission include near-term development, fielding, integration and sustainment of Blocks 1.0 through 5.0; increasingly robust testing; and a knowledge-based Capability Development program.

Block 1.0

We are nearing completion of the work in Block 1.0. We are requesting $59 million for fiscal year 2009, mostly to conduct additional system ground and flight tests to support a final Block 1.0 capability declaration.

This past year we saw an unprecedented pace of fielding of an integrated missile defense capability, much of it related to Block 1.0. In 2007 we emplaced 10 additional GBIs, for a total of 24 interceptors in missile fields at Fort Greely, Alaska, and Vandenberg Air Force Base, California. In 2008 we plan to increase interceptor inventories up to a total of 30 at the two sites. By the end of 2008, we will complete work installing the Long-Range Surveillance and Track (LRS&T) capability on 18 Aegis BMD ships. These ships will contribute to long-range defense by passing early detection, cueing, and tracking data across communications lines into BMD system communication and battle manager nodes located at Fort Greely and in Colorado Springs.

This past year we transitioned the transportable forward-based X-band radar at Shariki Air Base, Japan, from the interim site to a permanent location. This radar provides precise early detection and tracking to increase the probability we will destroy any lethal target launched by North Korea. The Sea-Based X-band radar (SBX) completed crew training and testing off the coast of Hawaii and transited to the North Pacific to conduct a cold weather shakedown off Adak, Alaska, where it will be home-ported in 2009. The SBX participated in system flight tests this past year, including the September 28 long-range intercept test and the December 17 engagement of a medium-range separating target at sea by our ally, Japan. This summer the radar will again participate in a long-range intercept test.

In 2007, we completed the fielding of C2BMC infrastructure to improve our ability to operate with Japan and receive direct feed from the Space-based Infrared System. We moved communications equipment and shelters to support the forward based X-band radar at Shariki and installed a second server suite at U.S. Pacific Command. We also began fielding enhanced C2BMC displays and improvements to our communications capabilities. The Parallel Staging Network we installed at U.S. Strategic, Northern, and Pacific Commands as part of the Concurrent Test, Training and Operations (CTTO) capability, will be completed this year. Without impeding the operational readiness of the system, CTTO allows the warfighter to conduct training and the Missile Defense Agency to continue with spiral upgrades, testing and development.

By 2009 we plan to install additional planning and situational awareness capabilities to facilitate executive decision-making in the European Command. C2BMC capabilities also provide our senior Government leadership situational awareness of hostile ballistic missile activities and updates on the performance of the ballistic missile defense system.

Block 2.0

Since 2002 we have expanded and improved terminal and midcourse defenses to defeat short- and medium-range threats from land and sea. We are requesting about $1.3 billion for fiscal year 2009 for Block 2.0 fielding, development, and integration. This block represents the foundation of the capabilities required to protect forces we deploy abroad and our allies and friends, initially in a single region or theater of combat.

We began fielding SM–3 interceptors in 2004. Block 2.0 comprises 71 SM–3 Block I and IA interceptors (we will have 38 in inventory by the end of 2008). To date, we have converted 12 Aegis BMD LRS&T ships to engagement-capable ships. By year's end, we will have 18 Aegis BMD ships—15 destroyers and 3 cruisers—all of which will have surveillance and track as well as engagement capabilities. For the past three years, the Navy and MDA have collaborated on plans for a Sea-Based Terminal defensive layer. We are upgrading the Aegis BMD weapon system, and the Navy is upgrading the SM–2 Block IV missile, the goal being to deploy up to 100 interceptors to provide a near-term terminal engagement capability on 18 Aegis BMD ships beginning in 2009.

We are working closely with the Army to begin developing and fielding in 2009 two Terminal High Altitude Area Defense fire units, with full delivery in 2010 and 2011. THAAD is uniquely designed to intercept targets both inside and outside the Earth's atmosphere. Consisting of 48 interceptors and the associated radars and C2BMC, THAAD will provide transportable terminal protection from short- to medium-range ballistic missiles for our troops and our allies.

Block 3.0

We are requesting about $1.7 billion for fiscal year 2009 to expand the defense of the United States to include limited Iranian long-range threats. Block 3.0 builds

on the foundation established by Block 1.0. Block 3.0 provides 14 additional GBIs above what we plan to deploy by 2008, along with two key radars needed for protection of the United States—the upgraded early warning radars at Fylingdales in the United Kingdom and at Thule in Greenland.

This past year we completed operational testing of the Royal Air Force Fylingdales radar and made the radar available to the warfighter for emergency situations. In 2007 we began upgrades to the Thule radar and will continue to integrate it into the system by 2009. Together with the early warning radars in California, Alaska, and the United Kingdom, the Thule radar will ensure coverage of the United States against threats from the Middle East. In the Pacific theater, we will continue to enhance additional forward-based X-band radar capabilities in Japan and at other operating locations to meet warfighter needs.

Block 3.0 also provides capabilities to defeat more sophisticated midcourse countermeasures. We are pursuing two parallel and complimentary approaches to counter complex countermeasures: first, more sophisticated sensors and algorithms to discriminate the threat reentry vehicle in the presence of countermeasures; and second, a multiple kill capability to intercept the objects identified by the discrimination systems as potential threat reentry vehicles. Block 3.0 will focus on the first of these approaches. It includes upgrades to the Ground-Based Interceptors, sensors, and the C2BMC system. The full implementation of this approach will be conducted in phases, with the first phase referred to as "Near Term Discrimination" and the second phase as "Improved Discrimination and System Track."

Block 4.0

We are requesting about $720 million for fiscal year 2009 for Block 4.0 fielding, development, and integration. Block 4.0 fields sensors, interceptors, and the C2BMC infrastructure needed to improve protection of the United States and, for the first time, extend coverage to all European NATO allies vulnerable to long-range ballistic missile attack from Iran. This block focuses on deployment of the midcourse X-band radar, currently located at the Kwajalein test site, to the Czech Republic and the establishment of an interceptor field in Poland. 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. We believe that the long-range defense assets we are planning to deploy to Central Europe offer the most effective capability for defeating this threat.

The European Midcourse Radar would complement sensor assets deployed in the United Kingdom and Greenland and provide critical midcourse tracking data on threats launched out of the Middle East. The radar also would operate synergistically with the planned forward-based transportable X-band radar, jointly providing early threat detection and discrimination of the reentry vehicles.

A European Interceptor Site will consist of up to 10 interceptors, the two-stage configuration of our flight-proven 3-stage GBI. A 2-stage interceptor has less burn time than the 3-stage version, which allows it to operate within the shorter engagement timelines expected. Nearly all of the components used in the 2-stage interceptor are identical to those already tested and fielded in the 3-stage interceptor, which means modifications required to design, develop and produce a 2-stage variant are minimal. Nor are such modifications unprecedented. In fact, the first 10 Ground-based Midcourse Defense integrated flight tests, conducted between January 1997 and December 2002, successfully utilized a 2-stage variant of the 3-stage Minuteman missile. As we do with all system elements and components, we have planned a rigorous qualification, integration, ground and flight testing program for the 2-stage interceptor.

Several countries in southern Europe do not face threats from Iranian long-range missiles. Yet these same countries are vulnerable to the shorter-range ballistic missiles currently fielded by Iran and Syria. Mobile system sensors for Aegis BMD, THAAD, and Patriot are designed to be augmented by other sensors, like the European Midcourse Radar, and their interceptors are designed to engage slower short- to medium-range ballistic missiles systems. Together with other NATO missile defense assets, these missile defense forces will protect European countries vulnerable to short- and medium-range ballistic missiles when integrated into the NATO command and control structure.

Block 5.0

We are requesting $835 million for Block 5.0 for fiscal year 2009. This block builds on Block 2.0 to expand the defense of allies and deployed U.S. forces from short- to intermediate-range ballistic missile threats in two theaters. Block 5.0 will increase the number of SM–3 and THAAD interceptors and improve the performance of the Aegis BMD Weapons System and the SM–3 interceptor.

The SM–3 Block IB interceptor, a critical Block 5.0 development effort, will have major modifications to include a much improved seeker and a Throttleable Divert and Attitude Control System (TDACS). When combined with processing upgrades to the Aegis BMD Weapons System, the more capable Block IB interceptor will more readily distinguish between threat reentry vehicles and countermeasures. The Block IB expands the battle space and enables more effective and reliable engagements of more diverse and longer-range ballistic missiles. This year we look forward to completing design and testing for the two-color seeker and TDACS and commencing the element integration of the SM–3 Block IB missile in 2009.

Block 5.0 includes delivery of 23 SM–3 Block IA interceptors, 53 SM–3 Block IB interceptors, 2 additional THAAD fire units with an additional 48 interceptors, one X-band transportable radar for forward deployment, and the associated C2BMC support.

Development/Operational Testing

Testing under operationally realistic conditions is an important part of maturing the BMDS in all five blocks. We have been fielding test assets in operational configurations in order to conduct increasingly complex and end-to-end tests of the system. Our testing to date has given us confidence in the BMD system's basic design, hit-to-kill effectiveness, and operational capability. While the system is developmental, it is available today to our leadership to meet real world threats.

Our flight tests are increasing in operational realism, limited only by environmental and safety concerns. Each system test builds on knowledge gained from previous tests and adds increasingly challenging objectives. The Director, Operational Test and Evaluation, the Operational Test Agencies, and the warfighting community are very active in all phases of test planning, execution, and post-test analysis. Using criteria established by the war fighter and the Agency's system engineers, all ground and flight tests provide data that we and the operational test community use to anchor our models and simulations and verify system functionality and operational effectiveness.

In 2007, we conducted many system ground and flight tests. As stated earlier, last year we executed successfully a long-range ground-based intercept, six SM–3 intercepts of separating and unitary targets, and three THAAD intercepts of unitary targets. As of today, we have demonstrated hit-to-kill in 34 of 42 attempts since 2001.

After a legacy target failure in May 2007, we successfully completed Ground-based Midcourse Defense Flight Test-03a on September 28, 2007. In this test, an operationally configured GBI launched from Vandenberg Air Force Base engaged a threat representative intermediate-range target fired from Kodiak Island, Alaska, using sensor information from the operational upgraded early warning radar at Beale Air Force Base in California. Trained crews manning fire control consoles reacted within a specified window under limited-notice launch conditions. This test leveraged fielded hardware and fire control software as well as operational communications, tracking, and reporting paths. The Exo-atmospheric Kill Vehicle successfully collided with the target near the predicted point of impact, destroying it. This was our most operationally realistic, end-to-end test of the long-range defenses to date. Though they were not official participants of the test, the Sea-Based X-band radar and an Aegis BMD ship using its onboard SPY–1 radar also tracked the target and gathered data for post-test analysis.

We also had enormous success with our integrated ground tests, which involve the operational long-range defense elements and employ the actual operational hardware. We test the system end-to-end by simulating engagements. These ground tests, conducted in a lab environment and in the field, involve the wider missile defense system community, to include the National Military Command Center, the Operational Test Agencies, and U.S. Northern Command. They teach us a great deal and give us confidence to move forward with our intercept tests. The most comprehensive to date, these tests demonstrated the ability of the system to execute multiple, simultaneous engagements using operational networks and communications and fielded system elements in different combinations. The war fighter also was able to evaluate tactics, techniques and procedures. In 2008 and 2009 we will continue our integrated ground test campaigns.

We completed four U.S. sea-based tests and one allied sea-based intercept test in 2007. In all Aegis BMD tests, we do not notify the ship's crew of the target launch time, forcing crew members to react to a dynamic situation. This past year we successfully used Aegis BMD cruisers and destroyers to engage threat-representative short-range ballistic missiles and medium-range separating targets. We conducted a test with the U.S. Navy involving simultaneous engagements of a short-range ballistic missile and a hostile air target, demonstrating an ability to engage a ballistic missile threat as the ship conducts self-defense operations. In November, we simu-

lated a raid attack on an Aegis BMD cruiser using two short-range ballistic missiles. The cruiser destroyed both targets.

The December 2007 test off the coast of Kauai in Hawaii marked the first time an allied Navy ship successfully intercepted a ballistic missile target with the Aegis BMD midcourse engagement capability. The SM–3 successfully intercepted the medium-range separating target in space, verifying the engagement capability of the upgraded Japanese destroyer. It also marked a major milestone in the growing missile defense cooperative relationship between Japan and the United States.

Terminal High Altitude Area Defense completed three intercept flight tests against threat-representative short-range unitary targets in the atmosphere and in space. In addition, the THAAD radar and fire control participated in two Aegis BMD flight tests to demonstrate THAAD-Aegis interoperability. These initial THAAD intercept tests at the Pacific Missile Range Facility in Hawaii demonstrated integrated operation of the system, including radar, launcher, fire control equipment and procedures, and the ability of the interceptor to detect, track and destroy the target. Soldiers of the 6th Air Defense Artillery Brigade stationed at Fort Bliss, Texas, operated all THAAD equipment during the tests, which contributed to operational realism.

In 2007, the Missile Defense Agency conducted 25 major tests and successfully met our primary test objectives in 18 of 20 flight tests. In doing so, we used the test ranges available to us today to maximum capacity. These totals include three Patriot tests, two Arrow tests, and the U.S.-Japan cooperative test. Our test plans for 2008 and 2009 will continue to use more complex and realistic scenarios for system-level flight tests and demonstrate interceptor capabilities against more stressing targets.

In 2008, we are planning two system-level long-range intercept tests, and two more in 2009, all of which will push the edge of the envelope in testing complexity. The tests in 2008 will involve targets launched from Kodiak, Alaska, and missile defense assets separated by thousands of miles. We are expanding the number of sensors available to cue the system and engage targets. In our next long-range test, we will involve the early warning radar at Beale and the forward-based X-band radar, temporarily sited at Juneau, Alaska. This test also will demonstrate integration of the Sea-Based X-band radar into the sensor support system. The intermediate-range target will have countermeasures. Later in 2008 Ground-based Midcourse Defense will attempt to defeat a longer-range threat-representative target and demonstrate the ability of the SBX to send tracking and discrimination data through Ground-based Midcourse Defense Fire Control and Communications to the Exo-atmospheric Kill Vehicle prior to engagement.

We plan three Aegis BMD intercept tests in 2008 and 2009. In 2008 we will demonstrate an intercept of a unitary, short-range ballistic missile target in the terminal phase of flight using a SM–2 Block IV interceptor. Later this year we will conduct the second Japanese intercept test against a medium-range target warhead. And in 2009 we will conduct an intercept flight test against a medium-range target to demonstrate an expanded battle space.

The first test of THAAD this year will involve engagement of a separating target low in the atmosphere. In the fall we plan to demonstrate THAAD's salvo-launch capability against a separating target. In late spring 2009 THAAD will engage a complex separating target in space. And in 2009 we will increase test complexity by demonstrating THAAD's ability to destroy two separating targets in the atmosphere.

In addition to our system flight- and ground-test campaigns, the Missile Defense Agency will continue to participate in Patriot combined developmental/operational tests as well as Air Force Glory Trip flight tests.

Knowledge-Based Capability Development

The proliferation of ballistic missile technologies and systems means we will face unexpected and more challenging threats in the future. We are requesting about $2.5 billion in fiscal year 2009 for capability development work to deliver advanced capabilities that will help ensure America's ballistic missile defense system remains effective and reliable and a major element in our national defense strategy well into this century.

Destroying ballistic missiles in boost phase will deprive the adversary of opportunities to deploy in midcourse multiple reentry vehicles, sub-munitions, and countermeasures, thereby reducing the number of missiles and reentry vehicles having to be countered by our midcourse and terminal defenses. Success in the boost phase will increase the probability we will be successful in defeating an attack in the other defensive phases. As part of this layered defense strategy, we are developing the Airborne Laser (ABL) and Kinetic Energy Interceptors (KEI).

ABL is being developed to destroy ballistic missiles of all ranges. In 2007, the ABL program met all of our knowledge point expectations and cleared the way for the installation of the high-power laser on the aircraft by the end of 2008. We completed in-flight atmospheric compensation demonstrations and conducted low power systems integration testing, successfully demonstrating ABL's ability to detect, track, target, and engage non-cooperative airborne targets. Next we will integrate the high power systems and gear up for a series of flight tests leading to a full demonstration and lethal shoot-down in 2009 of a threat-representative boosting target.

The KEI program will provide mobile capabilities to intercept ballistic missiles in the boost, ascent or midcourse phases of flight. This multi-platform, multi-payload, rapidly deployable capability could not only extend the reach of the missile defense system, but it also will add another defense layer. In 2007, we completed hypersonic wind tunnel testing of the booster and successfully conducted static firings of the first- and second-stage motors. This year we are focusing on preparations for the 2009 flight test of the KEI booster, which, if successful, will demonstrate we are ready to proceed to intercept testing and integration into the system.

We are pursuing parallel and complementary efforts to counter complex countermeasures. Project Hercules is developing a series of algorithms to exploit physical phenomenology associated with threat reentry vehicles to counter on-the-horizon advanced threats and counter-countermeasures for employment in system sensors, kill vehicles, and C2BMC. The algorithms will improve sensor and weapon element tracking and discrimination via data integration and multi-sensor fusion data integration.

In the years ahead we expect our adversaries to have midcourse countermeasures. The MKV program is developing a payload for integration on midcourse interceptors to address complex countermeasures by identifying and destroying all lethal objects in a cluster using a single interceptor. This past year we delivered the initial models and simulation framework for testing sophisticated battle management algorithms and developed the liquid fuel divert and attitude control system.

Our strategy is to manage all future kill vehicle development under a single program office and acquire MKV payloads using a parallel path approach with two payload providers pursuing different technologies and designs. This strategy will allow us to better leverage industry experience and talent. The MKV approach leverages commonality and modularity of kill vehicle components on various land- and sea-based interceptors, to include KEIs, GBIs, and a Block IIB version of the SM–3. The goal is to demonstrate a multiple kill capability in 2011 through a series of component development and test events.

We are undertaking significant upgrades to the BMD Signal Processor in the Aegis BMD weapons system. Through our cooperative program with Japan, we are upgrading the SM–3 Block I interceptor with the SM–3 Block II to engage longer-range ballistic missiles. This faster interceptor will feature an advanced kinetic warhead with increased seeker sensitivity and divert capability. We also will implement upgrades to the Aegis BMD Weapons System. The first flight test is scheduled for 2012. The Far-Term Sea-Based Terminal program will expand upon the near-term capability provided by the SM–2 Block IV blast-fragmentation interceptor by engaging longer-range threats. This year and next we will define weapons system requirements as we work toward initial fielding as early as 2015.

We are developing the Space Tracking and Surveillance System (STSS) to enable worldwide acquisition and tracking of threat missiles. Sensors on STSS satellites will provide fire control data for engagements of threat reentry vehicles and, when combined with radar data, will provide improved threat object discrimination. In 2008 we will deliver two demonstration satellites scheduled for launch later in the year and a common ground station. We plan to use both targets of opportunity and dedicated targets to demonstrate STSS capabilities from lift-off through midcourse to reentry. The knowledge gained from these demonstrations will guide our decisions on the development of a follow-on space sensor constellation.

I believe the performance of the BMD system could be greatly enhanced someday by an integrated, space-based interceptor layer. Space systems could provide on-demand, near global access to ballistic missile threats, minimizing limitations imposed by geography, absence of strategic warning, and the politics of international basing rights. I would like to begin concept analysis and preparation for small-scale experiments. These experiments would 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 reductions in our fiscal year 2008 budget. Reductions in funding for the European Site Initiative, STSS, ABL, and MKV programs will result in some schedule delays. Cuts in the system engineering work, including modeling and simula-

tions, undermine our ability to develop and field an integrated system, which requires a collaborative effort by MDA and our industry partners that cuts across many disciplines and specialties. The ability to do this cross-cutting engineering work will become increasingly important as we move, for example, towards developing common kill vehicles and common interceptors.

I remain deeply concerned about the future threat environment, and consequently believe each one of these efforts is critical to maintaining our defenses in the uncertain years ahead.

SETBACKS IN 2007

With our unprecedented success in 2007 came several setbacks. We experienced a target failure in our first attempt for FTG–03 as mentioned earlier. While this was only the second complete target failure in 42 intercept flight tests, it was a signal that we needed to revamp our target program, which is underway. We are at a critical juncture in the target program transitioning from the legacy booster motors to the more modern Flexible Target Family, and I intend to make this a high priority in 2008.

In addition, we are investigating a nozzle failure that occurred in the second static firing of the KEI second stage. While investigation is underway, we plan to execute the first booster flight in 2009.

We also experienced some cost growth in the THAAD, Aegis and GMD programs which is being addressed within the overall missile defense portfolio. The THAAD cost growth was due to test delays, additional insensitive munitions testing and its deployment to the Juniper Cobra 09 exercise in Israel. Aegis cost growth was generated from extended work on the SM–3 Third Stage Rocket Motor and the Divert and Attitude Control System. This work also delays the delivery of the Block 1B interceptors by 1 year. GMD cost growth was due to the modifications required for the 2-stage version, the additional missile field in Alaska, and repair of the water damage silos.

RETAINING INTEGRATED DECISION AUTHORITY

I would now like to turn to a topic very near and dear to me. I urge the Committee to continue its support of the integrated decision authority that the MDA Director has been given for the missile defense portfolio. As you know, working with the USSTRATCOM Commander, I have the ability to propose the evolution of the missile defense system based on all relevant requirements, acquisition, and budget information. This authority was necessary in light of the President's 2002 directive to begin deployment in 2004 of a set of missile defense capabilities that would serve as a starting point for improved and expanded missile defense capabilities later.

I present to you two telling quotes from the 2006 Defense Acquisition Performance Assessment (DAPA) report chartered by the Department.

"[T]he budget, acquisition, and requirements processes are not connected organizationally at any level below the Deputy Secretary of Defense. This induces instability and erodes accountability. Segregation of requirements, budget and acquisition processes create barriers to efficient program execution."

"Acquisition programs need to deliver timely products. Our assessment is that the culture of the Department is to strive initially for the 100 percent solution in the first article delivered to the field. Further, the "Conspiracy of Hope" causes the Department to consistently underestimate what it would cost to get the 100 percent solution. Therefore, products take tens of years to deliver and cost far more than originally estimated."

Well, the DAPA report could have cited the one place in the Defense Department below the Deputy Secretary where requirements, acquisition, and budget authority comes together—the Missile Defense Agency. This authority has given me the trade space to make a balanced recommendation to the Deputy Secretary that has paid dividends for defense of our homeland, deployed forces, allies, and friends.

MDA has fielded an initial capability consisting of 24 Ground-Based Interceptors; 17 Aegis BMD warships capable of long-range surveillance and tracking, of which 12 are also capable of missile intercepts; 25 Standard Missile-3 interceptors for Aegis BMD warships; 18 SM–2 Block IV interceptors; an upgraded Cobra Dane radar; two upgraded early warning radars; a transportable X-band radar; a command and control, battle management, and communications capability, and a sea-based X-band radar. None of this capability existed as recently as June 2004. This rapid fielding would never have been possible unless I had the integrated decision authority over requirements, acquisition, and budget. I think it is fair to say that

this capability would have taken 2 to 3 times longer to field under standard Department practices—if not the "tens of years" cited by DAPA.

Should this integrated decision authority be continued now that we have successfully met the President's injunction to quickly field an initial capability where no capability had previously existed? I would make four key points in favor of retaining this authority.

First, the Director of MDA is in the best position to know the program's progress and challenges. This does not mean that I make decisions in a vacuum. We work closely with the intelligence community, the war fighter, and the Services on the threat, capability needs, and available resources. In addition to the external oversight from your committee and others in Congress and, of course, the Government Accountability Office, I also receive significant Department-level oversight from Under Secretary AT&L, the Office of the Secretary of Defense Comptroller, and the Missile Defense Executive Board. However, it does mean that I have a degree of control and trade space that is not available to the managers of other major defense acquisition programs.

Second, because the ballistic missile threat is always evolving, we need to be as agile as possible in getting the latest capabilities to the war fighter. The integrated requirements, acquisition, and budget authority granted MDA's Director inevitably enables us to deliver a capability more quickly to meet the evolving missile threat.

Third, while some see MDA's flexibilities as undeserved special treatment, others view MDA's integrated decision authority as, in effect, a "test lab" for the Under Secretary of Defense AT&L to examine alternative, creative approaches to acquiring joint capabilities.

Fourth, ballistic missile defense is and always will be the quintessential joint program. No one Service could easily or naturally take responsibility for developing, testing, integrating, and fielding the BMDS. The trade space offered me as portfolio manager of the entire BMD program is considerably wider than it would be if MDA were wedded to one Service or merely an advocate within the Office of the Secretary or joint staff who is trying to negotiate with a myriad of individual program managers protecting their own turf.

On a personal level, I take my stewardship responsibilities very seriously. I will not be in this position forever, and I know how vitally important it is to put my successor in the best position to give the war fighter the capabilities needed to negate the threats to our homeland, deployed forces, allies and friends. The integrated decision authority granted me as MDA Director does just that, and I urge your continued support.

ORGANIZATIONAL REENGINEERING

MDA's reengineering goal is to transform the organization into a single, integrated high-performance team capable of sustaining its development and test successes and maximizing its efficiency and effectiveness in acquiring, fielding, and supporting an integrated, operational BMDS. To accomplish this goal, I have established policies and defined responsibilities for providing qualified matrix support to the program directors/managers (PD/PM) responsible for delivering BMDS capabilities to the COCOMs. Matrixing is an organizational concept that consolidates skills and resources under a functional manager who, in turn, allocates persons and resources among executing organizations needing these skills. Matrixed support includes such functions as engineering, contracts, business/financial management, cost estimating, acquisition management, logistics, test, safety quality and mission assurance, security, administrative services, information assurance, and international affairs. The matrix management process aims to strengthen PD/PM capabilities by assuring their accessibility to all expertise available to MDA; increasing accountability for quality of functional staff work; and allocating personnel resources according to the Agency's needs.

MDA has established the following objectives to focus the reengineering efforts:

—Implement a full matrix management construct to strengthen functional responsibilities at both the BMDS and element level of program execution

—Establish key new or restructured organizations and centers to strengthen the implementation of an integrated system

—Establish key knowledge centers to focus MDA resources on and within critical mission technical areas [7]

—Complete an organizational alignment assessment to improve agency efficiency and effectiveness through elimination of redundancy of functions and infrastruc-

[7] Knowledge centers for Interceptors, C2BMC, and Sensors were established in January 2008. Centers for Space and Directed Energy will be established later in 2008.

ture, multiple layers of management and non-critical functions, and a verification that resources are aligned with MDA priorities

—Relocate MDA offices from the National Capital Region (NCR) to Huntsville and selected other locations to realize the benefits of a centralized control/decentralized execution strategy, facilitate leveraging all resources available in MDA and propagate better cross-flow of expertise and information.

BASE REALIGNMENT AND CLOSURE (BRAC)

The 2005 Defense Base Realignment and Closure Commission approved recommendations directing the realignment of several MDA directorates from the NCR to Government facilities at Fort Belvoir, Virginia, and the Redstone Arsenal in Huntsville, Alabama. Specifically, a Headquarters Command Center for MDA will be located at Fort Belvoir, while most other MDA functions will be realigned to Redstone Arsenal. The transfer of Government and contractor personnel from the NCR is already in progress; by the end of 2008, we will have transitioned some 1,100 personnel positions to the Arsenal. Also, construction will start in fiscal year 2008 on additional facilities to be opened in two phases in fiscal year 2010 and fiscal year 2011. Construction of the MDA Headquarters Command Center (HQCC) is also scheduled to begin in late fiscal year 2008, with occupancy in fiscal year 2010.

MISSILE DEFENSE AGENCY ENGINEERING AND SUPPORT SERVICES

Consistent with the Agency's reengineering, MDA has undertaken the task of improving how it procures contractor support services (CSS). The objectives of the change are to improve oversight, enable matrix management so the Agency can benefit more from cross-flow of information among different offices, enhance efficiency and transparency, and more accurately account for our cost of doing business. I have determined that the best path forward is to develop a new Agency-wide procurement; the designation for this procurement is Missile Defense Agency Engineering and Support Services (MiDAESS).

We currently receive contractor support through a variety of different avenues, such as contracts, other Government agencies, and General Services Administration orders. Over the next few years, the MiDAESS procurement will allow us to consolidate the CSS into a more efficient procurement, focused on the primary areas of technical, administrative, financial, and other support that our agency requires.

Beginning in March 2007, we began discussions with our industry partners regarding MiDAESS. Throughout 2007, MDA has received industry feedback and continues to refine the details of how competition and contracting within MiDAESS will function. We plan to begin initial contract awards under MiDAESS in 2008.

CLOSING

Mr. Chairman and members of the Committee, in closing, I again want to thank you for your strong support of our program. Since 2002 we have achieved dramatic program efficiencies and effectiveness because we have been able to consolidate missile defense expertise and integrate all missile defense elements into a single, synergistic system. We have made tremendous progress deploying missile defenses to protect our homeland, our troops deployed and our allies and friends. I also believe we have the right program in place to address more advanced threats we may face in the future.

Our investment in missile defense is significant, but our expenditures would pale in comparison to the overwhelming price this nation could pay from a single missile impacting America or one of our allies. We need your continued support to carry on the tough engineering and integration task of developing and enhancing worldwide ballistic missile defenses.

This concludes my statement. I look forward to your questions.

Senator INOUYE. We now recognize General Campbell.

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

General CAMPBELL. Mr. Chairman, Senator Stevens, distinguished members of the subcommittee, thank you for your ongoing support to missile defense.

Today, I'll give you the user's perspective of these capabilities. I'm able to report with confidence the combatant commanders' input into the ballistic missile defense system (BMDS) continues to expand.

Last year I outlined a process named the warfighter involvement process. As a result of the continued maturity of the program, we're seeing substantial warfighter-requested modifications incorporated into the ballistic missile defense system.

The operators remain fully integrated into the Missile Defense Agency's test program. Our involvement spans from the development of test objectives to operators sitting at the consoles and executing the engagements that you just witnessed in Trey's film.

The flight tests attract the most attention but they are only one aspect of a comprehensive testing campaign. Our operators also participate in frequent ground testing and hardware in-the-loop testing. The warfighters are able to identify more effective methods for employing the systems and assist the testing cadre and developers in identifying problems long before we move to flight test. These tests in turn influence further program developments.

The operational commands clearly recognize the threat we face today from both short- and medium-range missiles. Today we can't meet all of the combatant commanders' needs. We must continue our close coordination with the Missile Defense Agency to ensure the missile defense portfolio addresses the warfighter needs for the near-term threats as well as the mid- to the far-term threats.

Maintaining a balanced investment portfolio is critical. Although we understand the potential adversaries' inventories of short- and medium-range missiles today are significant, we cannot lose sight of the qualitative improvements nations are making in their ballistic missile systems.

Our investments for both the near and far term must be informed by both the quantitative and qualitative advancements our adversaries are making in their programs.

PREPARED STATEMENT

Mr. Chairman, provided congressional support, we will continue to develop, field and improve an integrated missile defense for our Nation and our deployed forces and our friends and allies.

I look forward to your questions.

Senator INOUYE. Thank you very much, General Campbell.

[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 again before this panel. As I shared last year, I do believe that this Committee is a strong supporter of the Army and the missile defense community. This is especially important as we continue to field missile defense capabilities and to continue development of future capabilities for the Nation and our allies. Along with those testifying today, I am an advocate for a strong global missile defense capability.

The Committee is no doubt familiar with my duties and responsibilities as the Army's senior commander for space and missile defense as well as my position as the Commander of the Joint Functional Component Command for Integrated Missile Defense, a part of the U.S. Strategic Command (USSTRATCOM). 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.

Mr. Chairman, please rest assured that America's Army stands on point to defend our Nation against an intercontinental ballistic missile attack. Our soldiers continue to be trained and ready to operate the Ground-based Midcourse Defense (GMD) Element of the Ballistic Missile Defense System (BMDS) at Fort Greely, Alaska, Vandenburg Air Force Base, California, and the 100th GMD Brigade's Missile Defense Element at Schriever Air Force Base, Colorado. These soldiers, as part of the Joint team, continue to serve as our Nation's first line of defense against any 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: PLANNING, INTEGRATING AND COORDINATING MISSILE DEFENSE

The Joint Functional Component Command for Integrated Missile Defense (JFCC–IMD), U.S. Strategic Command's global missile defense integrating element, has been operational for 3 years. The JFCC–IMD continues to be manned by very capable Army, Navy, Air Force, Marine Corps, and civilian personnel.

USSTRATCOM, through the JFCC–IMD, continues to aggressively execute its mission to globally plan, integrate, and coordinate missile defense operations. Through a deliberate training and exercise program, the JFCC–IMD has improved our collective ability to defend this Nation. While the organization is still maturing, 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 in order to maintain a strong defense against advancing threats. In summary, JFCC–IMD continues to build operational competence and warfighter confidence in the execution of our mission.

Continued Ballistic Missile Defense System Progress

This past year has been another year of operational achievement for integrated missile defense. Since the last time I addressed this Committee, the Global Ballistic Missile Defense System has gone from test-bed operations to a system configured to support continuous defensive operations. Whether a test bed with a residual operational capability, or an operational system that supports research and development activities, it is understood that our efforts and decisions must be entirely focused along two lines—operational capability and spiral development of the BMDS system. We balance both fielding of near-term and development of long-term capabilities to meet the evolving threat to the homeland. This balance cannot be achieved without comprehensive dialogue between MDA, the services, and the warfighters—dialogue that is ongoing today and dialogue that must continue in the future.

We are continuing to expand the current ballistic missile defense operational configuration. This past year, the early warning radar at Fylingdales Royal Air Force Base was upgraded to perform the missile defense mission. This radar is a key element of the BMDS for providing the initial limited defense capabilities to counter the emerging ballistic missile threat from Southwest Asia. The radar will also continue to perform its traditional role as an early warning radar. The addition of this radar marks the beginning of the integration of BMDS capabilities across five Combatant Commands to counter simultaneous ballistic missile threats from two ends of the globe. We expect the warfighting capability provided by such integration of platforms, doctrine, and personnel to continue to grow in the coming years to address emerging threats.

Continued Warfighter Contributions to BMDS System Development

As warfighters, we continue to participate in key BMDS tests to build confidence in the system's capabilities and provide input to future capabilities. For example, the 100th Missile Defense Brigade provided a trained and certified crew in support of a successful GMD flight test on September 28, 2007. Their support started with participation in pre-mission training conducted in both Huntsville, Alabama, and at their GMD Fire Control (GFC) consoles at the Missile Defense Element (MDE) at Schriever Air Force Base, Colorado. The crew provided critical expertise that enhanced system performance, assisting the engineers with validation of pre-mission

parameters. These pre-mission events culminated with the conduct of the flight test, where the crew provided the Human-In-Control actions necessary for a successful launch and intercept. The Brigade will also support the upcoming GMD flight test. For this flight test, the AN/TPY–2 Forward Based X-Band and Sea Based X-band (SBX) radars will be integrated into the GMD system to validate their operational utility and to provide data for anchoring our modeling and simulation efforts.

Since last year's testimony to this Committee, we successfully intercepted ballistic missiles at low and high altitudes; in midcourse and terminal phases; and in endo- and exo-atmospheric environments with our long-range ground-based interceptor, the Terminal High Altitude Area Defense (THAAD), and several AEGIS Standard Missile-3s (SM–3s). We supported an International BMD Partner with a successful exo-atmospheric intercept from a Japanese Maritime Self Defense Force Destroyer. Conducting these system-level flight and ground tests required the use of operational assets, the same assets that would be used to defend this Nation and our allies against a possible rogue state 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. This period of robust achievements underscored the warfighter's requirement to expedite development and deployment of a concurrent testing, training, and operations (CTTO) capability. We have made strides but we still have a ways to go. CTTO will permit developers and operators to maintain an operational capability of the BMDS while simultaneously developing, testing, or training on the system. Absent a mature CTTO capability, JFCC–IMD aggressively conducts an asset management process to ensure the highest level of operational readiness during the conduct of materiel development and tests.

Continued Advancements in System Capability

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 institutionalized the Operational Readiness and Acceptance (OR&A) process to deliberately activate capabilities by baselining the known capabilities and limitations. Through this process, activation criteria, which are critical to establishing and maintaining capabilities, are clearly defined to ensure sustainable systems are provided to the warfighter.

We continue to refine our processes to ensure the warfighters' desired operational capabilities are considered by the materiel developer. Since I last appeared, the Warfighter Involvement Process, known as the WIP, has matured significantly. Warfighter inputs and subsequent changes to the overall BMD system of systems started slowly but are steadily increasing in effectiveness. After 2 years of operator generated input, we are now seeing changes incorporated in the BMDS. More significantly, capability requests are being reflected in USSTRATCOM's Prioritized Capability List submissions and in MDA's corresponding Achievable Capabilities List.

A success story in the WIP process is our partnership with MDA, the services, and the Combatant Commanders in the expansion of the BMD capability into the European theater. In my role as the JFCC–IMD Commander, I have held discussions with the European Command to build stronger partnerships with our Allies should our Government conclude agreements for hosting a midcourse radar and interceptor site in Europe. If approved, the expansion of the BMDS into Europe will greatly increase the security of the United States as well as provide a measure of protection to our forward deployed forces and European allies that currently does not exist.

Looking forward, we are engaged with the Department to balance the missile defense portfolio to ensure we are addressing both the threats of today and tomorrow. With more than 20 countries, several of which have an adversarial relationship with the United States, now possessing ballistic missile capability and technology, the threat to the United States and our allies is growing. The missile defense investment portfolio must address the warfighter needs for the near-term threats from these countries while developing new technologies to deter potential adversaries from their continued investment in ballistic missile technologies.

To guide the planning of a near-term and long-term investment portfolio, the Department is conducting a number of studies, including the latest iteration of the Joint Capability Mix (JCM) Study. The intent of the JCM II Study was to explore and assess aggregate BMDS capabilities and provide analysis in support of determining the appropriate BMDS weapon and sensor mix to address the ballistic missile threat for two near simultaneous major combat operations in the 2015 timeframe. The results of the recently completed study indicate a future need for addi-

tional THAAD and SM–3 inventory. With the warfighter analysis, MDA is seeking to identify and allocate sufficient resources to address the requirement during the upcoming Program Objective Memorandum cycle. In addition to the JCM effort, JFCC–IMD is also coordinating an employment strategy of the AN/TPY–2 (aka Forward Based X-Band Radar) to enhance global and regional missile defense capabilities. This employment strategy considers various aspects of military utility and geopolitical concerns to inform leadership toward a decision. Other efforts that impact force structure and inventory requirements include various wargames and exercises to define the future operational concepts, including wargames with our allies.

Taking Care of our Warfighters

If we receive approval to proceed with a European capability, we need to ensure we provide quality facilities and services to our soldiers. If built, the European capability will most certainly be an enduring mission. The mission support infrastructure (barracks and morale and welfare facilities) is just as important to mission success as the hardware the soldiers will operate. We believe that the mission support facilities "outside the wire" are an integral part of the overall system. The investment in mission support infrastructure contributes immensely to the overall reliability of the system and the cost represents a very low percentage of the overall system construction and fielding cost.

We should continue to work to improve the quality of life at our missile defense garrison at Fort Greely, Alaska. Soldiers in the 49th Missile Defense Battalion of the Alaska Army National Guard continue to defend the United States from ballistic missile attack from the remoteness of Fort Greely, Alaska. They continue to do so in an outstanding manner, without complaint, in an environment with infrastructure that does not meet current standards. While the Army is taking proactive steps to improve the quality of life at Fort Greely, the isolation of this remote location cannot be overstated. On the positive front, the Army recently awarded a contract to privatize the family housing at Fort Greely—soldiers and their families should start to realize significant housing improvements in the near future. Also, the Army is currently planning to replace an existing substandard fire station with one that will provide adequate coverage for Fort Greely's population and infrastructure. Challenges still remain as there is very limited support in the local community with respect to medical and dental care, special education needs, higher education opportunities, restaurant establishments, and other services that the vast majority of us take for granted. For example, the nearest medical specialist is over 2 hours away. This is very problematic, especially when one considers the extreme weather during the winter months. Our soldiers and their families deserve more—we need to provide the adequate facilities and the services they need. The Army will continue to address these challenges to ensure better living conditions are realized for our soldiers and their families.

ARMY INFRASTRUCTURE CONTRIBUTIONS

The Army also provides key test range assets for BMDS research and development. In addition to providing other vital Department capabilities, these unique facilities continue to serve as key BMDS system enhancers for MDA. The United States Army Kwajalein Atoll/Reagan Test Site (USAKA/RTS) in the Republic of the Marshall Islands has been instrumental in the development and testing of the GMD system. USAKA/RTS will continue to serve as a significant test bed for future BMDS technology development. Also, within the BMDS arena, the High Energy Laser Systems Test Facility on White Sands Missile Range, New Mexico, is serving as a key lethality test bed for MDA's Airborne Laser Program. We ask for your continued support to ensure these vital testing ranges are postured to perform necessary BMDS testing.

AIR AND MISSILE DEFENSE—AN OVERVIEW OF THE FISCAL YEAR 2009 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. GMD 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 the Secretary and Chief of Staff of the Army have previously testified, the Army is stretched after years of operating at war. To relieve the stress on the force, the Army is embarking on a path to restore balance. The Army's plan centers on four imperatives—sustain, prepare, reset and transform. As we have seen with

other Army combat capabilities, the requirement for air and missile defense units continues to grow, stretching the force. Operation Iraqi Freedom consumes significant quantities of our key missile defense capabilities, leaving other worldwide commitments under-resourced.

Already well underway, the Army has created composite air and missile defense battalions to transform the Air Defense Artillery into a more responsive and agile organization. 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 and missile defense and high-to-medium altitude air and missile defense. Additionally, the Army has pooled air defense artillery battalions at the theater-level to provide air and missile defense protection based on the situation and mission requirements. 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 Commander's needs.

With that as a brief background, let me now focus on the Army's fiscal year 2009 budget submission for air and missile defense systems. The recently submitted President's Budget includes approximately $2.23 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.

Army Integrated Air and Missile Defense (IAMD) System of Systems (SoS)

In order to enhance its ability to destroy theater air and missile threats, the Army is continuing to transform its air and missile defense force from its traditional system-centric architecture to an integrated, component-based, IAMD SoS. The Army IAMD SoS Program provides full, network-centric, plug-and-flight integration of existing and future air and missile defense systems and enables their full technical, functional, and procedural integration into the Joint IAMD arena. This modularization of air and missile defense capabilities will allow Joint Force Commanders to scale and tailor air and missile defense components functioning interdependently to deliver operational capabilities not achievable by the individual elements of the system. Given the diversified air and missile threat set and the limited resources to address the threat, development of IAMD SoS is the Army's top air and missile defense priority.

In addition to the IAMD SoS interdependent capabilities, the Army's air defense community has initiated plans to meet the future challenges and demands, taking steps to sustain, prepare, reset, and transform our forces and equipment. These plans entail 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 soon to be deployed Terminal High Attitude Area Defense (THAAD) system brings an unprecedented level of protection against missile attacks to deployed U.S. forces, friends, and allies well into the future.

PATRIOT/PATRIOT Advanced Capability-3 (PAC 3) Overview

PATRIOT is the world's only battle-proven theater AMD system and will be a key AMD element for the next two decades, providing Combatant Commanders with modular, scalable, mission-tailored capabilities to greatly enhance operational force protection in support of the Joint team. The PATRIOT is the Nation's only deployed, land-based, short-to-medium range BMDS capability.

The Army recognized that the PATRIOT force was heavily stressed and therefore developed a strategy to Grow-the-Force through a combination of pure-fleeting the existing PATRIOT force to PAC–3 capability and standing up two additional PAC–3 battalions. This strategy will increase our capacity to handle today's threat and alleviate logistical and training challenges of maintaining two separate PATRIOT configurations. Pure-fleeting of the PATRIOT force with PAC–3 will allow for improved capability and higher lethality against the Theater Ballistic Missile (TBM) and non-TBM threat as well as enable commonality across all Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (known as DOTMLPF) domains in the PATRIOT force. Also, the additional two battalions

of PATRIOT PAC–3 capability will meet the growing demands of the Combatant Commanders to provide global AMD against the entire threat set. Fiscal year 2007 reprogramming actions and fiscal year 2008 funding initiated this strategy—funding in the amount of $492.8 million in the fiscal year 2009 budget request will complete these initiatives and continue PATRIOT modifications.

Last year, my statement addressed the ongoing PATRIOT fixes to operational deficiencies that were deemed necessary as a result of friendly fire incidents. The Army has taken steps to address lessons learned and correct the deficiencies. Based on the current fielding schedule, all Operation Iraqi Freedom fixes will be completed during fiscal year 2009.

Medium Extended Air Defense System (MEADS) Overview

A top Army priority system for defense against short- and medium-range tactical ballistic missiles and air breathing threats, the MEADS system will be an integral part of the Army Integrated AMD System of Systems and capable of operating within a Joint and coalition operational environment. The system will provide wide-area protection at strategic, operational, and tactical levels.

MEADS, a cooperative development program with Germany and Italy, will provide a lighter, more deployable, maneuverable, lethal, network-centric AMD capability. The program also includes development of the PAC–3 Missile Segment Enhancement (MSE) as the objective tri-national MEADS missile. The PAC–3 MSE is currently under development and will be integrated into the MEADS program. The MSE missile will provide a more agile and lethal interceptor that expands the engagement envelope of this system. The fiscal year 2009 budget request includes funding for MSE initial production facilities—production of the MSE is scheduled to begin in 2010. Fielding of MEADS is scheduled to begin in 2015 and be completed by 2028. We are confident that this path will provide our forces, allies, friends, and our Nation with the most capable air and missile defense system possible.

Terminal High Attitude Area Defense System Overview (THAAD) Overview

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 a layered theater ballistic missile defense in support of the short and medium range ballistic missile threat. MDA is funding and manufacturing four THAAD batteries for the Army in an accelerated fielding that will commence in 2009. THAAD capabilities will begin to transfer to the Army in 2009. Synchronization between the Army and MDA is crucial in both the development and funding areas in order to ensure that the transition delivers a supportable warfighting system.

To fully optimize the performance of the PATRIOT, MEADS, and THAAD defense systems, effective personnel training and development is essential. The United States Army Fires Center of Excellence at Fort Sill, Oklahoma, will provide our Nation with the best trained, organized, and equipped Air Defense Artillery leaders and units in response to current operational needs and future force warfighting concepts.

Joint Tactical Ground Station (JTAGS)

JTAGS is a transportable information processing system that receives and processes in-theater, direct down-linked data from Defense Support Program satellites. JTAGS provides our commanders with early warning of ballistic missile attack and essential information to defeat TBMs. The system disseminates warning, alerting, and cueing information on TBMs, and other tactical events of interest throughout the theater using existing communications networks. JTAGS determines the TBM source by identifying missile launch point and time and provides an estimation of impact point and time. Since the system is located in-theater, it reduces the possibility of single-point-failure in long-haul communication systems and is responsive to the theater commander. JTAGS also fulfills the in-theater role of USSTRATCOM's Theater Event System (TES). It is imperative that JTAGS be funded to integrate and evolve to use the next generation of Space Based Infrared System sensors. This will significantly enhance warning accuracy and timeliness while improving all aspects of theater missile defense. We request your continued support of this essential capability.

Cruise Missile Defense

Our adversaries understand the value of cruise missiles. They are inherently very difficult targets to detect, engage, and destroy, and when armed with a weapon of mass destruction warhead, the effects from a cruise missile are catastrophic. The Army's Cruise Missile Defense Program is an integral element of the Joint cruise missile defense architecture. 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. 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), and the PATRIOT MSE missile. These systems are on schedule to provide an initial operational capability by 2012. Additionally, these systems will be networked within the IAMD SoS architecture, have an integrated fire control capability and operate within a common command and control system. Initial operational capability is planned for 2014.

Force Protection

In the conduct of Operation Iraqi Freedom, insurgents continue to pose serious dangers by employing indirect-fire tactics of quick-attack, low-trajectory, urban-terrain-masked rocket, artillery, and mortar (RAM) strikes against U.S. forward operating bases in Iraq. To combat this threat, the Army developed a Counter-Rocket, Artillery, Mortar (C–RAM) capability—an integrated set of capabilities to provide warning and intercept of RAM threats. The primary mission of the C–RAM project is to develop, procure, field, and maintain a capability that can detect RAM launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. C–RAM utilizes a system of systems approach and is comprised of a combination of multi-service fielded and non-developmental item sensors, command and control elements, and a modified U.S. Navy intercept system. The system utilizes a low cost commercial off-the-shelf warning system and a wireless local area network. Advances in the C–RAM capability will continue with funding that is requested in the fiscal year 2009 budget submit.

Efforts are also underway to use the benefits of directed energy to potentially counter the RAM threat. Developmental work by joint entities within the Department is producing results that are promising. Within the next few years, through the Army's High Energy Laser Technology Demonstration Program, we are very hopeful we will produce a mobile solid state laser weapon system that will serve as a complementary resource to the present and future kinetic energy capability in countering RAM projectiles. Your continued support in this area will ensure we advance indirect fire protection capabilities.

CONCLUSION

Mr. Chairman, the Army is a member of the Joint team fighting an adaptive enemy in a persistent conflict while transforming to meet future threats. We have responsibility for GMD, THAAD, PATRIOT, and MEADS and will continue developing and fielding an integrated missile defense for our Nation, deployed forces, friends, and allies. USSTRATCOM, through the JFCC–IMD, will continue to develop a Joint BMDS capability to protect our Nation, deployed forces, friends, and allies. The fiscal year 2009 budget proposal supports the transformation of the Army's air, space, and missile defense force to support the Army's future force, the Joint Integrated AMD System, and our global BMDS. We will continue to work with MDA, the services, and Component Commanders to define the characteristics of the emerging air, space, and missile defense force and determine how it can best support the warfighter and our Nation.

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. I'd like to now recognize for questioning our in-house expert on missiles, Senator Stevens.

Senator STEVENS. You're very gracious. Thank you very much, Mr. Chairman.

General Campbell, you've been up to Fort Greely several times and we've got the Alaska Guard taking over additional roles there on that site.

Are you satisfied with the progress that's being made, and can you tell us, do you have any change in plans in mind?

General CAMPBELL. Senator Stevens, I'm satisfied that we're moving in the right direction in terms of progress.

The missile defense system itself is a great system, a lot of significant investment has been put into the missile system, and I pay

a lot of attention to the mission support infrastructure; that is, Fort Greely itself, it supports our soldiers.

With your help, we've made some significant improvements but there's still more to be made in the future to support the spouses and the children that are at Fort Greely, but I'm satisfied that we're moving in the right direction.

Senator STEVENS. Well, I'm worried about this new paradigm on earmarks, General. We've got a situation and Fort Greely was subject to base realignment and closure (BRAC), and then we decided to put the missile defense system right adjacent to it and now we have the Guard and their families living at the old Fort Greely, but that has not really been upgraded to meet the situation of a permanent facility for those people.

Are you going to be able to make a request through the budget process to get that or are we going to be forced to have an earmark again?

General CAMPBELL. Well, I think it may be a mixture of both, but we have programs already in place. For example, on the mission support side, recently it was approved that we'll go ahead and privatize all the housing at Fort Greely, along with Fort Wainwright. So that is a major step forward, sir, that solves one of the most pressing problems at Fort Greely.

The Installation Management Command is also helping us with the community activities center that they're going to build for us over the next couple years.

So I think we have the major programs in place. I'm not saying we don't need additional help, but we're pushing on the right programs to get them into the budget so Fort Greely can be modernized.

Senator STEVENS. Well, I'm worried about the adequacy of medical facilities not only for the eventuality of any kind of emergency there but also for family medical care. That clinic has really, you know, never been upgraded.

Are you looking into that?

General CAMPBELL. Yes, sir, we are. In fact, my chief of staff just returned Friday night. We had the medical command with us in Alaska. In fact, Lieutenant General Eric Schoomaker will visit next month. They have already initiated a contract to actually improve the Delta Junction Family Medical Clinic which our spouses and children will be able to use. So that's an initial step which will put new equipment into his facility. We'll be able to conduct telemedicine out of his facility.

And the Fort Wainwright medical commander also sends a physician to Fort Greely once a month. It's a different type of specialist, based on the needs. So we're making progress. I don't think we're at the end state yet, but we've made the right moves immediately to solve some of that pressure on the families.

EUROPEAN MISSILE DEFENSE SITE NEGOTIATIONS

Senator STEVENS. General, we've got in this request, I understand, $712 million to develop the area for 10 ground-based interceptors in Slupsk, Poland, and a missile tracking radar in the Czech Republic.

Can you tell us how are those negotiations going on? Will you be able to spend that money this year, fiscal 2009?

General OBERING. Yes, sir. First of all, the negotiations with the Czech Republic have basically come to a conclusion and we do expect an agreement to be signed in the very near future with the Czech Government and then that will go into their parliamentary ratification process.

When the Polish Government changed out several months ago, there was a pause in the discussions with the Poles as the new government basically got in place. We resumed negotiations with the Poles. That's been lagging behind the progress that we made with the Czechs, but I believe that at this point, I'm still optimistic that we will get an agreement that we can work through by the end of this year and then that will set us up to where in 2009, we're able to go through all of the contractor selections and that type of thing to begin the construction in late 2009 for the missile field and for the radar site.

EUROPEAN MISSILE DEFENSE SITE

Included in the $712 million, just to make sure that we're encompassing, is the request for the money for the radar site, the money for the interceptor site, as well as the long lead that we would need for a portable radar that is part of this overall construct.

Senator STEVENS. Will that new site provide any protection for the United States from Poland?

General OBERING. Yes, sir, it will. The reason that we selected Poland and the Czech Republic as the primary midcourse radar and the interceptor sites was very simple. We looked at all the trajectories from Iran, all the launch points and all the possible impact points in Europe and in the United States that forms a trajectory of fans, a fan trajectory, and in order to cover those, Poland the Czech Republic provided the optimum solution for that coverage.

In addition, you have to worry about being too close or being too far back. If you're too close to the launch point, since we don't have a boost phase capability today, then you would not be able to engage all of the threats that we would need to, and also if you're too far back, you begin to roll back the coverage that you need for some nations that could be put at risk from a longer-range threat.

So the range considerations as well as the azimuth is why we selected Poland and the Czech Republic. That means we can engage threats from Iran to Europe obviously as well as from Iran into the United States.

Senator STEVENS. Well, Mr. Chairman, I think we ought to have a classified briefing on that in terms of the interface of that system with our side. I don't think many Members of Congress realize that there is that collateral benefit for this location and it's something we should maybe even take a group over to look at and understand.

AIRBORNE LASER

My last question would be about the airborne laser. We have had, you know, total confidence in that system and it seems to be

on track, but are you going to be able to demonstrate that system soon and how soon?

General OBERING. Sir, the airborne laser has met all of its knowledge points to date and the tremendous success last year, was that we demonstrated the capability that we need to shoot down a ballistic missile.

Now that means that we were able to fire the high-energy laser for a total of over 70 times in a 747 fuselage at Edwards Air Force Base. In parallel, we took the heavily modified 747 that also has a tracking laser and an atmospheric compensation laser on board, along with a surrogate of that high-energy laser. We fired the tracking laser, and the atmospheric compensation laser last year and the surrogate and we were able to track a target in the atmosphere, a boosting fighter as well as the big crow target that we used to emulate an early version of a target of a boosting missile.

We achieved all of those knowledge points, as I said, which means that today the aircraft is down on the ground. We have it opened up. We have installed all six of the large laser modules onboard the aircraft now. We're in the process of finishing up the installation, the plumbing and all of that. We're doing some refurbishment on the optical train and making some adjustments that we learned from our testing and then we plan to get back in the air early next year and shoot down, about midyear, a boosting missile.

Senator STEVENS. And when will that have emergency boost phase capability?

General OBERING. Well, sir, the aircraft itself, in an absolute emergency, could provide that, we would be demonstrating that next year. But then what we would anticipate is that we're going to take all of our lessons learned and put that into a transition period, continue to fly the aircraft and continue to learn from it and then determine how we can make the second and third and fourth aircraft affordable and as operationally affordable as we can make it.

Senator STEVENS. Thank you very much. I'll have some additional questions I'll submit for the record, Mr. Chairman.

Senator INOUYE. Senator Cochran.

MISSILE DEFENSE SYSTEM CAPABILITIES

Senator COCHRAN. Mr. Chairman, we understand that there are critics of our missile defense efforts. Some say it costs way too much, more than is necessary to spend, that the systems we're deploying or developing are vulnerable to decoys and other interference that would cause them to not work properly, and that it really spurs an international missile race and missile defense race, provoking other nation states to try to deal with the reality of threats that they may face.

I know that there's always going to be somebody, a naysayer, with criticism. From the very beginning, missile defense has been controversial in that regard because there's always more than one witness available to testify at hearings and cast doubt upon our capabilities.

But it seems to me that this recent experience we just had and the video you showed us is very strong and compelling evidence

that we have developed a sophisticated and capable system to defeat missile attacks, even though that wasn't what we were trying to defeat then, but it's very clear it was quite similar.

Is it an overstatement or an exaggeration to say that this is good solid evidence of the capability of missile defense systems that we are now developing and deploying?

General OBERING. Sir, I would tell you that I'm confident in the capabilities of the systems that we've deployed to address the threats that we anticipate we would face.

I will tell you that what most of the critics ignore, frankly, if I could zero in on a couple of things, number one, they ignore the fact that we are building an integrated layered system. They overlook that and so there are a lot of facets to this that allow us to handle increasing complexity as we move to the future.

For example, when you often talk about can you handle decoys or countermeasures, and I tried to point out in the video that we have an inherent ability on the kill vehicle itself, just by itself, to handle what we call simple countermeasures, and in fact we have flown against simple countermeasures in our past test program with a prototype of that kill vehicle.

But they ignore the other components that we're bringing into this fight, the very powerful X-band radars, similar to what we have now in test off the coast of Hawaii, the sea-based X-band radar. They ignore the forward-deployed X-band radar, like we have in Japan. They ignore the combination of sensors that we can bring to bear with all the advanced algorithms to help us sort through what those threats would be.

And then for the future, we are bringing two other critical components. One is to be able to track these threats from the very birth to their intercept and that's what we want to use with our space tracking and surveillance system that we plan to launch with two different satellites this year, and the second critical component is once we sort through these threat sweeps to be able to kill more than one object and we do that with our multiple kill vehicle program.

So when you take that in combination, it is, I think, prudent to think that we can keep up with the emerging threats that we may face for the future.

In terms of costs, if I could, and you've probably heard me say this, it is expensive, but it is certainly not as expensive as withstanding an impact of a weapon of mass destruction on an American city or one of our allied cities. That would be far more expensive and far more tragic and far more devastating.

So if we can prevent just one of those, we will have paid for this program many, many times over for every penny that's been appropriated for it, and it's even better than insurance because it actually prevents the event from occurring as opposed to being reimbursed for it.

And finally, in international, there is already a missile race, so to speak. That's for offensive missiles. We've seen that spreading across the world for these past several years and decades, and it's gotten to the point now where access is getting easier and easier to these missiles.

Frankly, I would like to see a missile defense race because what I'd like to see us do is join together between United States, NATO, Russia and others to field effective missile defenses because I think that would have an effect on the proliferation of the offensive missiles, because I think one of the reasons they've been so proliferated is—historically there's been no defense against them.

If we can show there is a defense against them, that we can destroy them, it may make countries think twice about heavily investing in those systems.

MISSILE DEFENSE AND NATO

Senator COCHRAN. One concern is whether or not our NATO allies are cooperating and helping as part of our agreement for joint defense activities, whether they're doing enough.

I'm aware of the fact that we're trying to deploy a radar system and I think the discussions are ongoing with the Czech Republic and others on that subject.

What is the level of cooperation and support that we have among our NATO and other allies?

General OBERING. Well, sir, just recently, there's been a couple of significant major milestones.

Number one, the most important probably is that at the recent NATO Summit in Bucharest, there was a communiqué that was signed by all NATO members that strongly endorsed the idea, the concept that there is an emerging missile threat that we have to concern ourselves with; second, that the United States proposals bring merit and are valid and useful in addressing that threat; and third, they tasked their own NATO members to come back with options as to how they build shorter-range defenses to integrate with the longer-range capabilities that we're proposing.

Now NATO has what they call an active layer theater missile defense program, they've had for several years, in which they're building the backbone of the command and control network that would then integrate the various member nations' components and several of the member nations are pursuing missile defense efforts from Patriot PAC–3 to sea-based to different sensors and other capabilities.

If they're doing enough, that's not my call in terms of the policy determination, but they certainly are stepping up to the plate, based on the recent developments, and the last thing I want to tell you very quickly is in January, we did a demonstration of taking U.S. information from our command and control and battle management system and running that on the NATO system, the NATO command and control system for missile defense and we did vice versa.

We took NATO data and ran that on the U.S. system and we showed how we can begin to integrate these capabilities to form basically a regional architecture in that theater.

Senator COCHRAN. Thank you very much. Thanks, Mr. Chairman.

Senator INOUYE. Senator Shelby.

KINETIC ENERGY INTERCEPTOR

Senator SHELBY. Thank you, Mr. Chairman. General Obering, the kinetic energy interceptor (KEI) received a funding boost in 2008 with Congress, I thought, demonstrating that this program should move forward.

What steps are you taking to ensure that the KEI is restored to a fully mobile weapon system, and do you have adequate resources to achieve this?

General OBERING. Well, sir, first of all, yes, sir, the Congress did appropriate and plussed-up the KEI Program. We view that as a very, very critical and valuable program to the overall portfolio. Not only does it serve as an alternative if the airborne laser trips up in its technical risk, but it also provides an option for a mobile midcourse capability.

Now, just like all of our programs, though, we hold them to our knowledge points that they have to meet. What they have to specifically meet is a very high acceleration booster flight in 2009 because that is the critical component of what they bring to the table.

Senator SHELBY. They have to perform, in other words?

General OBERING. Yes, sir, they have to perform, and so we are measuring that program's progress in being able to achieve that.

Now this year, there's a couple of setbacks; while we had successful static fires in the past, we were going to an optimized design for flight, and we had a couple setbacks in the second stage static fire. We had burn-throughs in the nozzle. We think that we do have root cause for that, what occurred and why, and the folks are working to correct that.

Senator SHELBY. Think you can fix that?

General OBERING. Yes, sir, and that should put us or keep us on track for that flight in 2009. I've already given them the direction to begin to expand their system engineering work and they're to begin that ramp-up in anticipation of that success, but we are going to still hold them to that knowledge point.

ADVANCED HYPERSONIC WEAPON

Senator SHELBY. Sure. General Campbell, advanced hypersonic weapon (AHW). Last year Congress appropriated, I believe, $41.7 million for the advanced hypersonic weapon. Shouldn't AHW, the advanced hypersonic weapon, continue to be included as part of the prompt global strike (PGS) initiative? In addition to working with the Air Force, what is the Army and the Space and Missile Defense Command (SMDC) doing to ensure that the advanced hypersonic weapon continues to receive congressional backing? In other words, where are you on this?

General CAMPBELL. Yes, sir. We're working closely with U.S. Strategic Command and General Chilton and the U.S. Air Force's Space and Missile Center. We're trying to reach agreement, particularly with the Air Force, where the technologies we're working on AHW, would be used in their particular program. Their PGS, their Precision——

Senator SHELBY. How do you feel about that? Is that good?

General CAMPBELL. I feel that's very good, and I think there's technologies there that are valuable in the development of their

system. So that's the path we've taken with General Chilton and the Air Force, is to contribute to the development of their particular program.

Senator SHELBY. Do you think that weapon system is very important then?

General CAMPBELL. I think that the technologies are going to be very important for a prompt global strike weapon system in the future.

Senator SHELBY. General Obering, the Missile Defense Agency Engineering and Support Services (MiDAESS)—is that what we call it—contract, the MDA Engineering Services, I think, is very important.

A number of small businesses have expressed concern that they were not being afforded the opportunity to compete for a lot of the technical work. I've mentioned this to you in our last meeting.

What are you doing to ensure that small businesses will be able to compete for this work, and when do you expect a final RFP to be released? You're very familiar with this.

General OBERING. Oh, yes, sir. For context, the reason MiDAESS is so important is that as we move those nearly 2,300 people from the Washington area into Huntsville, and as we consolidate and integrate more and more of our capabilities across the agency, it became obvious to us that we had an unnecessary overhead burden, so to speak, in contract management. We had many, many, many contracts of engineering and support services from a variety of locations that, when we consolidate, we can streamline and be able to eliminate some of that.

We issued a draft request for proposals because we wanted industry engagement on that. We are—we want and encourage small business to participate in that and we will ensure that occurs, and I believe that after this next round of comments that we get from industry, we can anticipate the request for proposal (RFP) to be released in the next several months.

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

Senator INOUYE. Senator Domenici.

Senator DOMENICI. Thank you very much, Mr. Chairman. I wanted to tell you, I haven't publicly been able to congratulate you, and I do that today, on your recent marriage and I look forward to meeting your spouse. We're going to have her up here pretty soon, right?

AMERICAN TECHNICAL EXPERTISE

Senator INOUYE. I'll be having her here.

Senator DOMENICI. We hope so. Thank you. Well, let me—I have a parochial question regarding the High-Energy Laser System Test Facility (HELSTF), but let me ask General Obering a general question regarding the status of the American economy and economic potential as it applies to your work.

I'm involved right now in my waning months as a Senator in trying to finish up some of the things that we need to do to make sure that the nuclear powerplants and nuclear power gets really firmly placed and that we have a civilian waste disposal recycling program. You probably understand that because it's part of general science.

But what we're finding as we get new proposals to build, there are seven full applications for nuclear powerplants and we had 27 years without any. We passed a new law with the help of everyone. I was chairman when we did it. A great law. That's what brought seven. It looks like we'll have 25 within a year—new applications at the Nuclear Regulatory Commission.

General, what they're finding as they look at the very first one and second one is that America has lost its manpower base and they can't find 2,600 workers, steelworkers and ironworkers, to go work on a powerplant, even at $40 an hour, which is what they're starting.

The whole build-up of nuclear powerplants is now looking at the fact that American industry doesn't have the capability of providing the infrastructure that it used to. So we have to go overseas and wait in line and we don't have anybody that makes the steel things that we need, believe it or not. We used to be the giant and it looks like we're hurting.

Now as the overseer of what you do for the Air Force and therefore for America in space, could you give us a quick assessment? Is there ample supply of—are there ample people qualified and trained to do the kind of sophisticated work that you're doing in behalf of the American people or are you finding it more difficult to find scientists, engineers and the like out of college and women and the like to join you? Could you address that for us, please?

General OBERING. Yes, sir. First of all, what we have noticed is that do we have enough people to accomplish what we need to get accomplished, the answer is yes. However, is it an ongoing task to make sure that we are continuing to find trained people and that we are continuing to pass on, frankly, information from generations of my age or older to the younger generations and that's what's become problematic, is making sure that has been occurring because there was a period in which we lost the recipe in some of that transformation and we're beginning to see some of the—I think some of the initiatives that many companies have taken to try to readdress that.

I'll give you a couple of examples. As you remember, we suffered from some mission assurance problems in late 2004/early 2005 in our long-range program, and we discovered that the ability to bring to bear the adequate systems engineering resources to that problem was one of the contributing factors leading up to that.

We made adjustments and Boeing made adjustments to be able to address that and they really imported some of the knowledge from some of the graybeards, so to speak, and some of the other areas of their particular company.

DIRECTED ENERGY AND LASERS

There are areas that we're on the edge. I think the directed energy is one of them and being able to have and continue to concentrate enough talent to be able to keep that ongoing and that's why I think the airborne laser is also one of the reasons it's such an important program to focus their talents and their capabilities.

Senator DOMENICI. What is directed energy? Tell me.

General OBERING. Directed energy is the use, for example, of lasers.

Senator DOMENICI. Yes.

General OBERING. There's other applications, but that's the primary one that we use. Products——

Senator DOMENICI. So you're not alone in using that. That's used—lasers are used by the Department of Energy in——

MISSILE DEFENSE PRODUCTS

General OBERING. Yes, sir. But the megawatt class that we're using and we're pushing the state of the art in terms of beam control, fire control, being able to control the jitter in these and the power itself.

Senator DOMENICI. Okay.

General OBERING. Products, we have to concern ourselves in some areas. For example, batteries has always been a major concern. The thermal batteries and to get the battery efficiency that we need. We monitor that all the time, being able to address that in our industrial base.

The thermal coatings and protections for our nozzles is another major problem in terms of rayon has always been the material of choice but we are running out of the supplies of rayon across not only the defense but the space industry as well and so we concern ourselves with how we address that.

So we have—I have a group that's solely dedicated to monitoring the production and the industrial base for missile defense so that we can try to lead turn those problems and try to address those.

HIGH ENERGY LASER SYSTEM

Senator DOMENICI. Thank you very much. Let me ask, General Campbell, with reference to High Energy Laser System Test Facility, HELSTF. On page 10 of your statement, I found it here, you mention that "within the Ballistic Missile Defense System, BDMS, arena, the high-energy laser system on White Sands Missile Range is serving as a key lethality test bed for MDA airborne laser program."

Those are your words. What's the Army current 2009 spending plan for HELSTF, and, second, if HELSTF is conducting key tests, why have you proposed budget cuts of almost $13 million?

General CAMPBELL. Yes, sir. The budget for 2009 will look as the budget is in 2008. It was approximately $2.9 million.

In our discussions that we had more than 1 month ago, sir, you know my sense of this, that it's an important national facility. The issue became affordability for us and having customers pay for some indirect costs.

Since our meeting, I've worked with the Missile Defense Agency on specific tests and the Missile Defense Agency has invested some dollars into the continuation of HELSTF, and I've addressed this back with the testing personnel at OSD, that we have to take a relook at this for continuing that particular contract.

But the bottom line, even if the contract were to go away, we want to preserve the facility. We'll have to mothball the MIRACL laser, but we see value as the solid state lasers come on to use that facility for the development of those tactical level systems.

MDA NEED FOR MIRACL LASER

Senator DOMENICI. All right. General Obering, in your memo, you gave me a memo on March 5 related to MDA and using a mid-infrared advanced chemical laser, MIRACL, at HELSTF for high-energy laser testing for our airborne laser program.

The Army's decision to close HELSTF adversely affects our ability to conduct testing that will ultimately increase program costs and risks.

Can you elaborate on this need in this setting, and you also wrote of a potential requirement to use HELSTF in the fiscal year 2010? Would you please explain that?

General OBERING. Yes, sir. We really need to be able to use that MIRACL laser as part of a parallel testing effort to continually look at the effectiveness of what different modes of lethality that we can employ to understand the phenomenology of the interaction between the laser and various materials, that type of thing. That is the instant requirement and it is a program in the near term that we need to get wrapped up this year for our testing and I think we just released an additional $2 million, if I recall, to the facility.

I'm to the point, sir, where I will fund that to get that testing done because it's that critical to us and so that is my intent for this year.

As we look to the future, as General Campbell said, it would be nice to have that option available, should we have to revisit some of this testing and ongoing evaluations of lethality, and I think that's important.

Senator DOMENICI. Should we consider transferring HELSTF to the Missile Defense Agency since it seems to me they're interested in all of HELSTF's capabilities?

General OBERING. Sir, I get accused of taking too much stuff under our wing enough, but it is part of a larger national range structure that General Campbell alluded to in his comments, and I'd like to be able to work with those folks to see if we can't do better in supporting that overall.

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

Senator INOUYE. Thank you, sir. General Campbell, I'm encouraged and impressed by the success of the Aegis Program.

Assuming that the program continues to enjoy successes, when do you believe more interceptors will be deployed to aegis ships, and when will the program be turned over to the Navy?

General CAMPBELL. Let me first address the missiles and it's difficult for me to speak for the Navy when the aegis system itself is in the Navy today and Trey may be able to talk to that with a little more detail.

But in terms of missiles, as you know, we completed a joint capabilities mix study recently and that study suggested that we should double the number of SM–3 missiles for our deployed forces.

The Missile Defense Agency has taken that recommendation and they're now putting those numbers into the program objective memorandum (POM) so that we can purchase those missiles in the out-years. So I don't see it occurring over the next 2 or 3 or 4 years.

That will be later in the POM period for doubling, nearly doubling the SM–3s.

MDA JOINT PROGRAMS—JAPAN

Senator INOUYE. General Obering, Japan is a significant partner in missile defense and we've been advised that they appropriated $6.7 billion since 2004 for these cooperative programs.

Can you provide us with an update on the status of these joint programs and assure us that the agency's committed to full development of the standard missile block 2–A with the Japanese?

General OBERING. Absolutely, sir. They are among the 18 nations that we have some type of relationship around the globe. They are clearly the most energetic and also the one nation that is bringing as much as they can to bear with respect to their own resources.

We have a program in which we are developing and delivering the current version of the aegis missile, the block 1–A that we talk about, that's what was used in the recent test in December off the Hawaii coast, to be able to be deployed eventually on four Japanese ships. They are in the process also of procuring and have deployed the PAC–3 in their country.

We have ongoing efforts with respect to the ability to share information between our systems and their systems by being able to connect our command and control systems so that we can provide, for example, radar data from the radar in Shariki to the Japanese systems and then vice versa some of their radar data. We'd like to have access to some of the radars they're developing around their nation.

Of course, the cornerstone going into the future is this very solid cooperation between the Japanese and ourselves on the block 2–A. We've had a series of reviews this year on the U.S. side as well as on the Japanese side. We get together for the combined system review this year as well. So that program is well on its way. They have my commitment to be able to meet our schedule for that program, to be able to develop a unitary kill vehicle for what we call the block 2–A version, and so far, I think that we're doing very well.

Now, there will be challenges because there's challenges with any major development program. You're going to have setbacks here and there. You're going to have unforeseen events that are going to happen as we go through this development, but I feel very strongly and I feel very good that we have good working relationships on both sides of the Pacific and good processes by which we can evaluate these trades as we move forward.

MDA TARGETS SHORTFALL AND FAILURES

Senator INOUYE. General Obering, the availability of targets seems to be the pacing element for missile defense tests. Take for example the THAAD Program. It slipped, I believe I've been told, by 6 months because of shortage of targets.

What are you doing to respond to the target shortfalls?

General OBERING. Yes, sir. First of all, if I can again put this in perspective, in our 42 flight intercept tests that I referred to earlier since 2001, we've had target failures in two of those. One of those was a THAAD target. That was a HERA target that THAAD was

to fly against. We also had two other target failures in what we call radar characterization flights.

Now, it is not a substantial percentage but it is worrisome enough that I wanted to take a look to understand what was going on in the targets program, and we discovered several things.

Number one, we discovered that we had management inexperience on the Government side and, frankly, we had inexperience on the contractor side. So we have since changed. We changed out the Government side, the contractor has changed out their side.

In addition, we had a requirements process that was driving too much variability to go into a single target. So it was causing a swirl of requirements that was increasing costs and causing some of the schedule delays.

We have since imposed a much more disciplined and rigorous requirements process between our engineering and our element program folks and the targets folks and so I believe that with these steps that we've taken that will address the issue that you referred to.

The THAAD Program, along with the aegis and GMD, they always are a challenge with respect to the cost growth, things that we are asking them to do, in addition to what they had baselined or cost growth that they get from within their program, and all of that for the THAAD Program also went into that delay in terms of the flight tests.

But I feel pretty good that we have this now back in hand and with your help, and we may need some help, by the way, sir, in 2009 with respect to the monies, additional monies that we may want for targets, I think we'll be back on track.

AIRBORNE LASER

Senator INOUYE. If I may ask a question, General Campbell, on the airborne laser program.

How is this program going to be used in warfare, and how many platforms would you require to perform this mission, and do you have any idea as to the cost of developing and fielding these systems?

General CAMPBELL. To the developmental costs and the fielding, I leave that to General Obering, but some of the initial work that I've seen from the Missile Defense Agency, if you look at maintaining it in orbit, say, to protect from a North Korea shot, you're going to have multiple aircraft to maintain one orbit.

Now I don't know what it costs to maintain one orbit over time. It's threat-dependent as to how long it would have to have these aircraft in the air.

In terms of operationally how we would employ them, right now we would see them being under the control of a regional commander working back with Strategic Command and Northern Command in support of the continental United States, but in terms of overall costs or operationally, I don't know what the cost is per hour at this point to keep one orbit, but it is multiple aircraft to just maintain an orbit.

Senator INOUYE. One—multiple aircraft for one?

General CAMPBELL. Multiple aircraft to maintain an orbit.

General OBERING. Sir, if I may address that as well? That is, by the way, having the ability to maintain a 24-hour orbit is what you would require two or three aircraft to be able to do. That is not unlike what we do today with AWACs and Joint Stars. It's the same type of construct.

The other thing to remember is that with the airborne platform, the airborne laser, you are shooting down multiple missiles with the single platform, whereas in our other programs, we're having to shoot in some cases multiple interceptors to take out the single missile and so there's a multiplication factor there that goes into play when you start thinking about cost affordability.

Finally, that's also what I alluded to earlier about going into this period of transition, not unlike, by the way, what we did with THAAD, to make sure that as we look at our successes in our test program and look at all the lessons learned and then factor that into can we get this to be operationally affordable for the forces and for the warfighter and that's part of the calculation that we have to do in that period.

Senator INOUYE. So you're not ready to give us numbers?

General OBERING. No, sir, not yet. I can tell you what it would take to get us to shoot down which is the tail end of about a $4.5 billion effort that we've been underway for many years, but in terms of what the overall life cycle cost of the program would be, that's part of what we want to make sure we understand in this transition period.

THAAD

Senator INOUYE. Well, General Campbell, THAAD has been performing well. If this success continues, do we have any funding in the Army to take over the system?

General CAMPBELL. Sir, that—the actual transition and transfer is being worked between the Army and the Missile Defense Agency, so that we understand principally the operational and sustainment costs of the system.

It is a concern of the Army's; that is, long-term affordability. We're working closely with the Missile Defense Agency to understand that, so that we can compete that in the out-year POMs. So that it's hard to answer your question today precisely when we don't know the precise costs yet.

COUNTERMEASURES

Senator INOUYE. One of the areas of concern for us would be enemy countermeasures. Can you tell us what you're doing about this?

General OBERING. Yes, sir. There's several steps. Number one, we are launching two space tracking and surveillance system satellites this year. This will—these two satellites which will go up in tandem on a single launch vehicle will work together to demonstrate that we can do precise tracking from space. Otherwise, the kind of tracking that we now use our land- or sea-based radars to do, we'll be able to do from space.

We have plans for a follow-on to that will get us a small constellation that will be sufficient, though, to provide us with what we call birth-to-death tracking. From the time that a missile is

launched, as it goes through its phases, to the time that we intercept it, we'll be able to do that tracking. That's the first key element of how you deal with countermeasures.

The second portion is to shoot that missile down while it is still boosting and that eliminates any having to deal with countermeasures in subsequent phases and, of course, the two programs we have there, airborne laser and the kinetic energy interceptor, but they're still several years away from being operational. So we have to worry about what do we do in the interim.

The next phase is or the next portion of this is to be able to do the advanced discrimination that allows us to handle those more complex decoys and countermeasures and that consist of the more powerful sensors. It consists of the more advanced algorithms that we're deploying on those sensors, in fact we have some in test right now, that we will be able to use for discrimination.

The final component, a qualitative component, is that we will be able to take out more than one credible object. So as we go through this process, if we have a very complex threat suite with many, many dozens of countermeasures, we will be able to sort out down to a manageable number what are credible objects or could be credible warheads, and then we basically destroy all of those in a shotgun effect with our multiple kill vehicle.

So it is a layered approach that we're taking to this, and in addition, as we move in the future, we will be able to deal in more inventory numbers that will augment what I just said.

So we think we're on a path to deal with this. We have some of the world's leading experts that are looking at this and, by the way, the other thing that we do is we fly these, we fly these ourselves. So we have a critical measurements and countermeasures program that we employ to do these measurements ourselves. We fly critical—I mean very complex countermeasures against our own sensors and against our own capabilities and that's part of why we are building confidence in being able to address this.

Senator INOUYE. Senator Stevens made a suggestion that maybe we should have classified hearings and maybe take a visit because your agency has a major role in the next, well, evolution step of warfare and admittedly we know very little about what is happening in your agency and yet we know in our guts that it is very important because you are dealing with the most potentially dangerous areas, areas that could end up in an explosion that would cover the globe.

So do you think we should have something like that?

General OBERING. Sir, we would welcome that.

Senator STEVENS. I'd have one last question, Mr. Chairman.

NUMBER OF GMD INTERCEPTORS

Are you concerned about the adequacy of the inventory of interceptors for testing? I would address both of you. We have competing priorities, I'm sure, in the missile defense area, but operationally, it seems that to meet the current ballistic missile threat, you really have to have a lot of testing.

Do we have the number of interceptors in our inventory that we need?

General OBERING. Sir, I think that from a developmental perspective, I would like to be able to add that—for example, as we process a long-range interceptor for test or a THAAD or aegis, I would like to have another interceptor that we process in parallel.

By the way, the same thing is true with targets because I think that gives us the ability to recover from hiccups that we have in that processing and so I would very much support that. We're trying to balance as much as we can the needs for this, as you just described, along with making sure that we at least maintain our options for the future. So that's why we continually are balancing this equation.

Senator STEVENS. What about you, General Campbell?

General CAMPBELL. These tests are so critical for the users, so that we can better understand the system that we're operating today, and I agree with what General Obering said, that I like this notion of having a parallel missile available should something happen to the primary missile.

Again, the tests give us critical insights into the system that we're operating today and it gives us insights into how it behaves and how we can change the behavior of that system.

Senator STEVENS. As you go forward now with the airborne laser, will you have to have an increased inventory to deal with that?

General OBERING. Sir, we have targets planned for that program. We have those programmed into our program.

Senator STEVENS. They're adequate now?

General OBERING. Yes, sir, so far.

ADDITIONAL COMMITTEE QUESTIONS

Senator STEVENS. Thank you very much, Mr. Chairman. Thank you very much, gentlemen.

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

QUESTION SUBMITTED TO LIEUTENANT GENERAL HENRY A. OBERING III

QUESTION SUBMITTED BY SENATOR RICHARD C. SHELBY

Question. It seems to me that early and prolonged success of our systems will be possible only if we can provide for the adequate integration of these forces by somehow netting them together into a system of systems. For example, the sensor information could be netted, and the warfighters provided with the composite information at the appropriate levels.

What is being done within the Army and Missile Defense Agency to bring forward sensor netting technologies that would enable warfighters at all levels to share information needed to fight successfully?

Answer. The MDA is addressing the sensor network challenge of creating a real-time multi-sensor track picture of the battlespace that the warfighter needs to successfully execute the mission, through what is called the Global Sensor Integrated Network (GSIN). MDA is involved at all levels of the GSIN work from the top (Committee of Principals) down through the two-star level Senior Steering Group and the GSIN Transformation Teams. MDA has representatives on four of the five GSIN teams and is Co-Leader of the GSIN Technical Implementation Team. GSIN's goal is to "Enable a unified national architecture for integrated sensor information in support of theater and strategic missile warning, missile defense and space situational awareness missions."

To build a fused track picture, the BMDS ideally must: globally track missiles of all ranges in all phases of flight (birth-to-death tracking); maintain single tracks across all sensors per tracked object; and combine discrimination information from all sources for each object. MDA is aggressively pursuing multiple system level func-

tions needed to enable this netted sensor capability. The functions MDA is working on include:

—*BMDS System Track*.—This C2BMC function will use system track data from the radio frequency (RF) and infrared (IR) geographically distributed BMDS Sensors to create a system track. The track quality will improve over time with additional sensor coverage, spectrum utilization (X-, S-, U-bands), RF/IR diversity, length of time in track, and track geographic diversity. In addition the results of BMD System Discrimination will be included in BMD System Track as well as certain sensor provided target features to enhance system engagement performance. Within C2BMC, the Global Engagement Manager (GEM) will be the vehicle to implement this functionality.

—*BMDS System Discrimination*.—This function will integrate the system track, discrimination, and target feature data to make system level evaluations of the lethal object.

—*BMDS Sensor Registration*.—This function will "gridlock" each sensor to known locations and establish bias and location errors. This is necessary to allow the correlation and discrimination functions to occur and improve sensor netting capability.

—*BMDS Correlation*.—This function will associate track, discrimination and feature data from numerous BMDS sensors (RF and IR) into a consistent set of information using advanced correlation techniques.

The MDA has also entered into a Memorandum of Understanding (MOU) with the Army Program Executive Officer (PEO) Missiles and Space in March 2007 that directs the two organizations to collaborate on a host of common areas and to formalize relationships between various PEO MS and MDA elements in support of joint efforts to develop, field and support a reliable Integrated Air and Missile Defense (IAMD) system. The goal of the MOU is to leverage completed and ongoing initiatives leading to an economy of effort and resources. This will potentially create a win-win situation, system of system integration at an equal or reduced cost. Some of the ongoing collaborative areas include a common IAMD Extensible Markup language (XML), an integrated battle planning capability, and element/component level testing. This innovative strategy across multiple fronts will ultimately benefit the warfighter by providing a truly integrated ballistic missile defense capability, while potentially saving significant dollars for both the Army and MDA.

The BMDS C2BMC program has also demonstrated the ability to share BMD data (i.e., tracks, engagement status, inventory, launch information, missile type, and threatened-assets) via Net Centric Standards (XML) to other commands, mission areas, and government agencies to improve warfighter integration and situational awareness.

QUESTION SUBMITTED TO LIEUTENANT GENERAL KEVIN T. CAMPBELL

QUESTION SUBMITTED BY SENATOR RICHARD C. SHELBY

Question. It seems to me that early and prolonged success of our systems will be possible only if we can provide for the adequate integration of these forces by somehow netting them together into a system of systems. For example, the sensor information could be netted, and the warfighters provided with the composite information at the appropriate levels.

What is being done within the Army and Missile Defense Agency to bring forward sensor netting technologies that would enable warfighters at all levels to share information needed to fight successfully?

Answer. In March 2007, MDA entered into a Memorandum of Understanding (MOU) with the Army that encourages collaboration on a host of common areas and to formalize relationships between MDA and Army elements in support of joint efforts to develop, field and support a reliable Integrated Air and Missile Defense (IAMD) system. The goal of the MOU is to leverage completed and ongoing initiatives leading to an economy of effort and resources. Some of the ongoing collaborative areas include a common IAMD Extensible Markup language (XML), an integrated battle planning capability, and element/component level testing. This innovative strategy across multiple fronts will ultimately benefit the warfighter by providing a truly integrated ballistic missile defense capability, while potentially saving significant dollars for both the Army and MDA.

In addition, current Army air defense systems share sensor surveillance data (track and identification) and contribute to a Single Integrated Air Picture (SIAP) via joint tactical data links (JTDL). Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), Sentinel and PATRIOT all contribute to a

SIAP capability by distributing and receiving sensor surveillance data to/from the Link-16 Joint Tactical Data Network (JTDN). JTDN data sources can include Higher Echelon Engagement Operations, joint systems such as Airborne Warning and Control System, and/or other Army air defense systems. Additionally, JLENS participates on the Navy Cooperative Engagement Capability (CEC) and Surfaced Launched Medium Range Air-to-Air Missile (SLAMRAAM) participates on the Joint Range Extension Application Protocol (JREAP) network.

Current and new Army air defense systems are actively migrating to a net-centric approach to fighting, including the netting and fusing of sensor measurements and global tactical track and identification data, the use of joint SIAP and tactical data link solutions, and the sharing of improved sensor performance capabilities with all network participants. Not only does the Integrated Air Missile Defense (IAMD) netted approach allow the sharing of sensor data, it facilitates technology insertion and evolution of new capabilities, thus prolonging the success of our air defense systems. This effort is being led by the AIAMD Project Office within the Program Executive Office, Missiles and Space. Sensors (e.g. JLENS, PATRIOT and Terminal High Altitude Area Defense (THAAD) radars, Sentinel) and weapons (e.g., SLAMRAAM, PATRIOT, and THAAD) are being integrated into an Internet Protocol-based, Integrated Fire Control Network (IFCN). An IAMD Battle Command System (IBCS) is being developed to provide the command and control for this System of Systems (SoS). To support the net-centric approach to air defense, the IBCS is being designed to be configurable and scalable both vertically and horizontally within the operational organizations, to support collaborative and distributed planning and engagement, and to provide aids to assist the warfighter manage the more complex SoS.

SUBCOMMITTEE RECESS

Senator INOUYE. Well, gentlemen, thank you for appearing before the subcommittee today. As a result of your response to my last question, General Obering, the subcommittee will stand in recess until Wednesday, April 30, when we'll meet in closed session in S–407 to review your programs.

General OBERING. Thank you, sir.

Senator STEVENS. Thank you very much.

[Whereupon, at 11:45 a.m., Wednesday, April 23, the subcommittee was recessed, to reconvene subject to the call of the Chair.]