

[H.A.S.C. No. 111-133]

**ARMY ACQUISITION AND
MODERNIZATION PROGRAMS**

HEARING

BEFORE THE

AIR AND LAND FORCES SUBCOMMITTEE

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

HEARING HELD

MARCH 10, 2010



U.S. GOVERNMENT PRINTING OFFICE

56-269

WASHINGTON : 2010

AIR AND LAND FORCES SUBCOMMITTEE

ADAM SMITH, Washington, *Chairman*

JOHN SPRATT, South Carolina	ROSCOE G. BARTLETT, Maryland
SILVESTRE REYES, Texas	CATHY McMORRIS RODGERS, Washington
MIKE McINTYRE, North Carolina	MARY FALLIN, Oklahoma
ROBERT A. BRADY, Pennsylvania	DUNCAN HUNTER, California
JIM COOPER, Tennessee	JOHN C. FLEMING, Louisiana
JIM MARSHALL, Georgia	MIKE COFFMAN, Colorado
JOE SESTAK, Pennsylvania	W. TODD AKIN, Missouri
GABRIELLE GIFFORDS, Arizona	JEFF MILLER, Florida
NIKI TSONGAS, Massachusetts	JOE WILSON, South Carolina
LARRY KISSELL, North Carolina	FRANK A. LoBIONDO, New Jersey
FRANK M. KRATOVIL, Jr., Maryland	ROB BISHOP, Utah
BOBBY BRIGHT, Alabama	MICHAEL TURNER, Ohio
WILLIAM L. OWENS, New York	TODD RUSSELL PLATTS, Pennsylvania
DAN BOREN, Oklahoma	

DOUG BUSH, *Professional Staff Member*

JOHN WASON, *Professional Staff Member*

SCOTT BOUSUM, *Staff Assistant*

CONTENTS

CHRONOLOGICAL LIST OF HEARINGS

2010

	Page
HEARING:	
Wednesday, March 10, 2010, Army Acquisition and Modernization Programs .	1
APPENDIX:	
Wednesday, March 10, 2010	47

WEDNESDAY, MARCH 10, 2010

ARMY ACQUISITION AND MODERNIZATION PROGRAMS

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Bartlett, Hon. Roscoe G., a Representative from Maryland, Ranking Member, Air and Land Forces Subcommittee	4
Smith, Hon. Adam, a Representative from Washington, Chairman, Air and Land Forces Subcommittee	1

WITNESSES

Gilmore, Dr. J. Michael, Director, Operational Test and Evaluation, Office of the Secretary of Defense	30
Lennox, Lt. Gen. Robert P., USA, Deputy Chief of Staff of the Army, G-8	5
Markowitz, Dr. David M., Director of Capabilities Integration, Prioritization, and Analysis and Technical Advisor to the Deputy Chief of Staff of the Army, G-3	12
Phillips, Lt. Gen. William N., USA, Military Deputy to the Assistant Sec- retary of the Army for Acquisition, Technology, and Logistics	8
Sullivan, Michael J., Director of Acquisition and Sourcing, U.S. Government Accountability Office	37

APPENDIX

PREPARED STATEMENTS:	
Gilmore, Dr. J. Michael	82
Lennox, Lt. Gen. Robert P., joint with Lt. Gen. William N. Phillips and Dr. David M. Markowitz	54
Smith, Hon. Adam	51
Sullivan, Michael J.	92
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING:	
Mr. Kissell	113
QUESTIONS SUBMITTED BY MEMBERS POST HEARING:	
Mr. Kissell	117
Mr. Owens	117

ARMY ACQUISITION AND MODERNIZATION PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
AIR AND LAND FORCES SUBCOMMITTEE,
Washington, DC, Wednesday, March 10, 2010.

The subcommittee met, pursuant to call, at 2:11 p.m., in room 2118, Rayburn House Office Building, Hon. Adam Smith (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ADAM SMITH, A REPRESENTATIVE FROM WASHINGTON, CHAIRMAN, AIR AND LAND FORCES SUBCOMMITTEE

Mr. SMITH. We will go ahead and call the meeting to order. We just finished up a series of votes, so I am sure there will be other members trickling in. We want to be respectful of our witness' time and take advantage of it as much as we can. We are fortunate in the sense that we have now a lengthy debate on the House floor, so we will not have votes for quite a while and should be able to get the hearing in without the normal interruptions—so pleased about that. And we will go ahead and get started.

The subcommittee meets today to receive testimony on the Army's acquisition and modernization budget request for fiscal year 2011. And we welcome our witnesses for today. We have Lieutenant General Robert R. Lennox, who is the Deputy Chief of Staff, G-8. We have Lieutenant General William Phillips, Military Deputy to the Assistant Secretary of the Army, Acquisition, Logistics and Technology, and Dr. David M. Markowitz, Director of Capabilities, Integration, Prioritization and Analysis and technical advisor to the Deputy Chief of Staff, G-3.

You must have a very big business card—or, sorry, not big so much as lengthy, lots of words on it.

That will be our first panel. We will have a second panel as well. Dr. J. Michael Gilmore, who is the Director, Operational Test and Evaluation for the Office of the Secretary of Defense (OSD), and Mr. Michael Sullivan from the General Accounting—Accountability Office (GAO), director of acquisition and sources. So we will have two panels of witnesses today.

In addition to these witnesses, the subcommittee specifically requested that the Army bring subject matter experts on all the major programs in the budget, so members should not hesitate to ask detailed questions.

And I will leave it to your gentlemen's judgment as to who is best to answer those. All we ask is if we do have people come up, they be sure and speak clearly into the microphone and identify themselves before they answer questions.

The Army's fiscal year 2011 base budget includes \$10.3 billion in research, development, test and evaluation and \$21.3 billion in procurement. The Army is requesting an additional \$150 million for R&D and \$8.9 billion in procurement in the overseas contingency operations (OCO), formally known as the supplemental. So we have a new name for it, but it is the same issue. And we will hopefully have that up sometime soon as well.

Overall, this total request for \$42.9 billion appears to be a solid request that will provide the Army with most of what it needs for today's wars and investments in future capabilities. And I think that is the major challenge of this committee. We have many obligations and, obviously, national security is of utmost importance at all times, but particularly important when we have our troops at war in two separate places in Iraq and Afghanistan.

At the same time, even with those critical needs, we live in a world of finite resources, finite resources that seem to be getting more finite all the time, so I respect the difficult job that you gentlemen have to balance those needs, make sure we are providing for the warfighter, and at the same time doing it in a way that we can afford. It is a big challenge, and that is what this committee is going to be very focused on.

With regard to specific programs, this hearing will highlight several new initiatives and changes to ongoing programs. First, the subcommittee expects to hear an update on the Army's new Ground Combat Vehicle (GCV) program. This program, begun in the wake of the termination in the Future Combat Systems' (FCS) manned vehicles, seeks to field a new infantry carrier by 2017. And as we go forward with this, the committee's main concern is that, frankly, we get a better result than we got out of Future Combat Systems.

And we understand the challenges. It is our view that a big, big part of the challenge was that we set a very, very aggressive set of specifics, capabilities that we were looking for out of these programs that were perhaps a little bit unrealistic in terms of what they were going to be able to achieve. At the same time, we then set it on a very aggressive schedule, which put us in a position of having to authorize procurement of pieces of equipment that had not yet tested out.

It was a bad combination, and we hope we have all learned from that experience as we go forward with the Ground Combat Vehicle, as well as our other programs, to make sure that we are realistic about the capabilities that we can accomplish and then set a timeline that makes sense, because we want to make sure that we are not procuring stuff that has not yet been proven to work.

To do that, I think we need to be very diligent on those issues as we go forward. The Ground Combat Vehicle will be a central piece of that.

So we hope we will do better on that. And I think similar things can be said about the other pieces that are left of the Future Combat Systems program, which is now dubbed the Early Infantry Brigade Combat Team (EIBCT).

Again, a lot of the pieces of that were very ambitious, and we did not quite measure up. And as we are going forward with determinations of what to buy out of those remaining pieces, we want to make sure that it has tested out. We had some very concerning

test results recently on a number of the programs within the EIBCT, and we want to make sure that those are fixed before we go forward and buy more.

And we also have a concern that the Future Combat Systems program, even though it has been officially terminated, its base contract with the lead systems integrators (LSI), Boeing and SAIC, lives on. So we have sort of main contractors for a program that has now been changed.

As a result of this contract, the Army appears destined to be committed to using an LSI for the EIBCT program through 2014, more than five years after the base FCS program was terminated by the Department. So we will want to see how that balances out. I am curious about your thoughts on that.

With regard to the Stryker vehicle program, I am aware that the Army is considering a new double-V hull upgrade for some Strykers in order to improve their protection against Improvised Explosive Devices (IEDs). I look forward to hearing an update on the status of that plan today. We obviously consider this to be a very important issue, since it is force protection focused.

At the same time, we want to make sure that we can do it in a way that doesn't take away the advantages that the Stryker gives us. We have a number of the Stryker brigades actually out of my district, out of Fort Lewis. I have had the opportunity to talk to a number of soldiers from within those brigades. They love the Stryker. They love the Stryker mainly because of how mobile it is. It gives them at least a little bit of the ability to control their own destiny in a firefight or if they encounter an IED.

So we want to make sure we strike that balance. At the same time, if we can make it safer, do it in a responsible way and get this program done, we would love to be able to get that done. So I want to hear from you about how we can go about doing that.

Another issue facing the Army this year is the future of the M4 carbine. Now, the Army has fielded hundreds of thousands of these weapons in recent years and is now looking at both an upgrade program and a potentially new weapon development effort as well.

And basically, you know, what we are going to be looking at on that is, you know, balancing the reports, and there were a lot of troubling reports about the performance of the M4 with a lot of the tasks that have frankly shown it to be performing quite well. And if it is performing quite well and if in fact this is just anecdotal stories about problems with the gun, not a systemic problem, then obviously that is the most cost effective way to deal with it.

We also want to hear more about how you plan to balance the looking at a new gun while at the same time looking at ways to update the one that you have. How are you planning on balancing that out to meet the needs and do so in a cost effective way?

Finally, today's hearing also covers areas that don't get that much attention in the media, but which represent very large annual investments by the Army: communications, equipment and trucks.

This is a critical year for the Joint Tactical Radio System (JTRS), which recently transitioned to the Army for program management. The success or failure of elements of this program will have long-

lasting implications for Army communications and network equipment.

In the area of trucks, the Army continues to spend billions a year on a wide range of vehicles. Of note this year is a shift to production for Army medium trucks from BAE to Oshkosh. We are also interested and we understand at both BAE and Oshkosh with different vehicles, we have a fair number of vehicles that have been completed but have not yet been distributed. And we are curious about the reason for that delay and how big a problem you think that delay is and what we are doing to deal with it, if in fact it is a problem.

In addition, the Army's future plans for Humvee production appear to have changed significantly with funding for new U.S. Army Humvees being zeroed out in the 2011 budget submission, and we would be curious to hear more about your thinking behind that decision and the future, how it impacts the future of our tactical vehicles.

With that, I will turn it over to the ranking member on the committee, Mr. Bartlett, for his opening statement. And I will also ask unanimous consent to submit—I have additional comments in my statement that I did not read—to submit those for the record.

[The prepared statement of Mr. Smith can be found in the Appendix on page 51.]

Mr. SMITH. Mr. Bartlett.

STATEMENT OF HON. ROSCOE G. BARTLETT, A REPRESENTATIVE FROM MARYLAND, RANKING MEMBER, AIR AND LAND FORCES SUBCOMMITTEE

Mr. BARTLETT. Thank you, Mr. Chairman.

First, I would like to take this opportunity to welcome my friend from Washington to the Air and Land Forces Subcommittee and congratulate him on his selection as chairman. This subcommittee has a long record of working together in order to properly equip our Army and Air Force. I am looking forward to working with you. Again, Mr. Chairman, welcome.

To our witnesses for both panels, thank you for being here. We are very fortunate to have each of you serving our country and to have you here today. I would also like to congratulate General Phillips on his recent promotion to lieutenant general.

Mr. Chairman, I have just a couple of issues I would like to quickly highlight. First is in regards to electromagnetic pulse (EMP). Essentially all of our new weapons systems have been built with a waiver for EMP hardening. I won't get into the details here, although I believe it is an extremely important issue. General Phillips and I briefly discussed this last week, so I know the Army plans on following up with me in the near future to discuss my concerns.

In addition, I continue to be concerned about the continued decline in research and development (R&D) funding. From 1983 till today, our investment in basic defense research as a percentage of GDP has declined by 50 percent. As a farmer, I will tell you that this is no different or less dangerous than a farmer eating their seed corn.

It is politically easy to cut research, because we can't see the future harvest from innovation. However, as a scientist and engineer, I can guarantee you that unless we reverse the decline in basic applied and advanced research funding, we will cripple America's ability to maintain a technological world leadership in future decades.

This not only impacts potential future capabilities for our warfighters, but also has an industrial base impact. With our technical workforce aging, we are in danger of losing our intellectual capital. We need to develop the next generation of engineers and scientists that will ensure the world's greatest innovators reside here in this country. So I hope to learn more from the Army in regards to how they are doing in this area.

Thank you for being here, and I look forward to your testimony. Thank you, Mr. Chairman.

Mr. SMITH. Thank you very much, Mr. Bartlett. And thank you for the welcome to the committee.

It is a privilege to be the chair of this committee. I have served on it for many years and appreciate Mr. Bartlett's leadership and very much appreciate what the former chairman, Mr. Abercrombie, and Mr. Bartlett did in working in a bipartisan way. There are certainly disagreements on this committee. The great thing about it is frequently they are not partisan, and they are always handled in a very professional way. And I hope I can live up to the standard that Mr. Abercrombie and Mr. Bartlett have set in that regard.

And with that, we will turn it over to our witnesses for the testimony. My understanding is that General Lennox is going to go first.

General, you may proceed.

**STATEMENT OF LT. GEN. ROBERT P. LENNOX, USA, DEPUTY
CHIEF OF STAFF OF THE ARMY, G-8**

General LENNOX. Well, good afternoon, Chairman Smith, Ranking Member Bartlett and distinguished members of the Subcommittee on Air and Land Forces.

We thank you for this opportunity to discuss the Army acquisition and modernization programs and specifically those that involve the fiscal year 2011 budget request. We are pleased to represent the Army leadership, members of the Army acquisition workforce, and the more than one million courageous men and women in uniform who have deployed to combat over the last eight years and have relied on us to provide them with world-class weapons systems and equipment for mission success.

As Chairman Smith mentioned, my name is Bob Lennox, and I am the Deputy Chief of Staff for the Army, the G-8. And my responsibility in that capacity is equipping the Army units primarily. I am joined today by Lieutenant General Bill Phillips, the Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology, and by Dr. Dave Markowitz, the Director of Capabilities Integration, Prioritization and Analysis in the Army G-357.

I will start the comments, sir, by talking about Army modernization and what is different this year from last. In our primary three lines of effort that we are going to be following in Army moderniza-

tion, first is our plan. Our first line of effort is buying new, buying new equipment to fill capability gaps.

The Secretary of Defense has talked recently about winning today's wars and then having the capability to hedge against an uncertain future. And that is the aim of our procurement, and I think you will see it. Our main focus in our modernization program is the Brigade Combat Team modernization strategy. If you will permit me, I will come back and talk about that a little bit later.

But we have also invested in a number of capabilities designed to win today's wars. So, for example, the Extended Range Multi-Purpose (ERMP) Unmanned Aerial Vehicle (UAV). We have invested in fiscal year 2011 about \$500 million in an Intelligence, Surveillance, and Reconnaissance (ISR) capability designed to help win today's fight. In fact, there is a Quick Reaction Capability in Afghanistan performing today.

We are buying aviation capabilities. We are forming the 12th Combat Aviation Brigade, and in fiscal year 2011 we begin the purchase of the 13th Combat Aviation Brigade. And it will be about \$6.6 billion invested in the 13th Combat Aviation Brigade.

And we are buying to equip our reserve component. In fact, the Army National Guard from September 2008 to September 2010 will experience 11 percent increase in their equipment on hand and a 12 percent increase in their modernization rates. So that is the first line of effort, buying new capabilities to fill the capability gaps that we need for today and in the future.

The second one is sustaining existing systems through the insertion of upgraded capabilities, recapitalization, and then in fact divesting capabilities that we no longer need, trying to keep our forces relevant and capable for the future.

For example, we are talking about the OH-58 Delta Kiowa Warrior. We see having to sustain the Kiowa Warrior through 2025, and we are investing in upgrades not only to the safety of the airframe, but enhancing the cockpit and sensors as well. This includes efforts to lighten the soldier's load.

And I was fortunate enough to talk to the committee about 13 months ago about force protection. I understand there is a committee hearing on this next week.

But we are comfortable talking about those issues today, improvements on things like the Improved Outer Tactical Vest (IOTV), fielding plate carriers that are about six pounds lighter than the IOTV to help our soldiers lighten the load and what they carry, and then divesting our oldest equipment, the UH1 Huey, born in Vietnam. The last one went out of the inventory in December 2009.

And the last M35 deuce and a half truck that you have heard about over all these many years will be out of the inventory by the end of fiscal year 2011. So that is our second priority area: continuing to sustain and upgrade the fleet that we have got and divesting capabilities that are no longer useful.

The third area is fielding according to Army priorities. And in October of 2009, we published the Army equipping strategy. And in there we talked about going away from a tiered readiness approach to one that fields the soldiers with the equipment they need to be successful in combat.

So every soldier going to combat, regardless of component, regardless of being in the active force, the National Guard or Reserve component, is fielded with the very finest equipment that we can field. And this includes priority and National Guard units doing homeland security missions, disaster relief, and support to civil authorities.

And you will find that in the National Guard, for example, our investment from 2001 through the end of our program in 2015 will amount to an average of \$3.4 billion a year to enhance their readiness for those missions.

Now, if you will permit me, sir, I will go back to our Brigade Combat Team modernization strategy and spend a few moments on what we think is our hallmark effort. And this is the main change on our modernization strategy from last year to this year when we had a Future Combat Systems focused modernization strategy, and today it has changed to the Brigade Combat Team modernization strategy.

There are four elements to the Brigade Combat Team modernization strategy. The first is incremental improvements to our network. Empowering soldiers, dismounted soldiers, is one of the critical aspects of our incremental modernization strategy in the area of network, giving them the capability to receive digital information to know where they are, where the enemy is, and empower them on the ground to make the most knowledgeable decisions in an era where the individual soldier is so much more important than even ever before.

The second aspect of that is to being able to accomplish battle command on the move. Today we fielded the Warfighter Information Network-Tactical (WIN-T) Increment One program, the Warfighter Information Network Increment One, and that is about fielded. And that starts to provide broadband capability down to our lowest units. Increment Two, which fields starting in fiscal year 2012, starts to deliver a capability of battle command on the move. And Increment Three, then, adds an aerial layer and enhances that battle command on the move capability. That is element one of our Brigade Combat Team modernization strategy.

Our second one is the pledge that we will incorporate the Mine Resistant Ambush Protected (MRAP) vehicles and the MRAP All Terrain Vehicle (ATV) into our formations.

The third tenet is accelerating and fielding of capability packages to Infantry Brigade Combat Teams (IBCTs). These are the FCS spinouts that we think are technologically ready, that include things like small robots, unmanned sensors, the Class I UAV unmanned aerial vehicle, vertical launch vehicle, to 29 IBCTs, Infantry Brigade Combat Teams, by fiscal year 2016.

Now, as Chairman Smith mentioned, these did have some challenges in their initial round of testing. They were found to be over-size in some case, overweight in other cases, and in some cases the mean time between failures did not measure up to the standards we want.

There are two more testing opportunities. There is one this August, and there is one next summer. We think we are on a path to demonstrate the capabilities that we can accomplish those capabilities.

But I want to assure this committee that if the capabilities do not measure up, we will not go forward with those capabilities, and we will not put them in the hands of our soldiers. And I think you will find if you look at the history of some of the capability spin-outs, that we have made those kinds of decisions on systems that have not measured up in the past.

And, finally, the last part of our Brigade Combat Team modernization strategy is the Ground Combat Vehicle. We think this is critically important. It is designed to provide a versatile range of capabilities that include force protection, off-road mobility, urban operational mobility, and to contain the size, weight and power to carry the network and expanded capabilities that we need today and into the future.

In closing, in support of the Army modernization, the Army has submitted a research development and acquisition budget request of about \$32 billion for fiscal year 2011. We believe that this budget appropriately allocates resources between bridging advanced technologies for our soldiers currently in the fight and developing new technologies to bring the required capabilities to soldiers in the future. As such, we meet our leadership's intent of concurrently preparing our soldiers for success today and transforming to meet the demands of the 21st century.

Mr. Chairman, Mr. Bartlett and members of the committee, on behalf of the soldiers and their families, we greatly appreciate the tremendous support we receive from this Congress and the American people. In order to successfully implement the plans we shared with you today, we urge your continued support.

Providing all of America's sons and daughters who serve in our Army with the most capable equipment for the battles they are fighting today and are likely to face in the future are the responsibilities that the Army takes seriously and is committed to accomplishing. Thank you for your time. I will now be followed by Lieutenant General Phillips.

[The joint prepared statement of General Lennox, General Phillips, and Dr. Markowitz can be found in the Appendix on page 54.]

Mr. SMITH. Thank you, General.

General Phillips.

STATEMENT OF LT. GEN. WILLIAM N. PHILLIPS, USA, MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS

General PHILLIPS. Chairman Smith, Congressman Bartlett, distinguished members of the subcommittee, I, too, am grateful for this opportunity to discuss the fiscal year 2011 President's budget in Army acquisition and modernization programs.

With this budget request, we are investing in the future force capabilities while enhancing the capabilities of our soldiers in the current fight. I am pleased to appear before you today with General Lennox and Dr. Markowitz. We are very grateful to the members of this subcommittee for what you have done to provide our Army and our soldiers the equipment that we have today that are in combat.

If I could just reflect upon my most recent assignment, which was 11 months, a little over 11 months in Iraq and Afghanistan,

serving beside our soldiers, they are amazing on the field of battle. And they are amazing for a number of reasons.

Number one, the American people have entrusted us with their sons and daughters, their most precious assets. Secondly, this committee and the Congress and the American people have provided us the resources with which we can build and develop programs and put them in the hands of our soldiers.

For those two things in particular, I have watched them operate on the field of battle, and I have been so impressed with how they operate. They truly are amazing, so thank you and the American people for entrusting us with those resources to be able to be successful. And we constantly strive in support of the American people to be good stewards of those resources.

Sir, today is a great day for the Army and a great day for the Army Acquisition Corps. This morning at 1030 hours, the Under Secretary of the Army swore in Dr. Malcolm O'Neill, formerly Lieutenant General Malcolm O'Neill, as the Army Acquisition Executive and the Assistant Secretary of the Army for Acquisition, Logistics and Technology. He takes over from Mr. Dean Popps, who has served our Army so well over the last eight years. So, sir, it was an honor to welcome Dr. O'Neill to our team.

Mr. Chairman, the Army has a comprehensive modernization plan, as articulated by General Lennox. With lessons learned from more than eight years of persistent conflict focused on future challenges and promising technology investments, we are pursuing a capabilities-based incremental modernization strategy.

Number one, develop and incorporate new capabilities and technology. Modernize and capitalize existing equipment and reset and invest those that are no longer necessary for our formations. And number three, we will field and distribute capabilities in accordance with the Army's resource priorities and also the Army's force generation.

I understand, Mr. Chairman, that there are several programs of interest to this committee, and with your permission I will briefly discuss their status.

We have organized the combat formation in a modular construct focused on the Brigade Combat Team. General Lennox has stated the Brigade Combat Team modernization plan includes modernizing the network over time, rapidly developing and fielding a new Ground Combat Vehicle, and incrementally fielding capability package that best meet the needs of soldiers and units as they train and then get ready to deploy.

Increment One of the Early Infantry Brigade Combat Team systems, including the network integration kit Class I unmanned aerial system, the small unmanned ground vehicles, and urban and tactical unattended ground sensors, have been approved by the Defense Acquisition Executive for low rate initial production.

The Army released a request for a proposal for the technology development phase of the Ground Combat Vehicle in late February. It will be our first combat vehicle designed from the ground up to operate in an IED environment.

With regard to the existing vehicles upgrades, the Army's combat platform modernization program is focused on standardizing the 31 heavy Brigade Combat Team sets with two variants of our domi-

nant combat platforms. That is the M1A1 and A2 Abrams and the M2 Bradley fighting vehicles.

The Stryker program received full rate production decision on 8 of 10 variants. This versatile and lethal vehicle can be deployed in trouble spots worldwide in all spectrums of operations.

The Paladin Integrated Management Program (PIM), or Paladin PIM, is the Army's first fire support modernization effort for the Paladin howitzer to enhance the delivery of accurate and timely fires where and when needed. It is an important cornerstone of our modernization strategy.

Modernization of our tactical wheeled vehicles is providing our soldiers with the best possible protection, payload and performance. At the heart of our plans is the Joint Light Tactical Vehicle (JLTV) with the Marines to replace the Humvee starting in about 2015.

We will continue to procure and field the family of medium tactical vehicles to replace vehicles in the immediate fleet that are over 30 years old. Recapitalization of our family of heavy tactical vehicle fleet will focus on variants of the aging Heavy Expanded Mobile Tactical Truck, better known as the HEMTT, as well as incorporate much of MRAP into our future forces as they are released from current operations.

On another matter of great importance, the Army is committed to continuing to improve our small arms capabilities. We are fielding a new semiautomatic sniper rifle, the M110, a new 40-millimeter grenade launcher, and developing a light 50-millimeter machine gun.

We are also taking a dual approach regarding the M4 to improve the current weapon system as we look forward to a new carbine requirement, as you mentioned in your opening comments, Mr. Chairman.

We are also working to deliver the best ammunition to our warfighters while at the same time fostering environmental stewardship. The M855 A-1 cartridge designed for the M16 and M4 family of weapons and the M249 squad automatic weapons meet both of these goals as a green program while providing consistent shot-to-shot performance against all targets. They will be available for fielding in June.

Information is key to success on the battlefield, and our new radios will provide enhanced communication capabilities to our forces. The Joint Tactical Radio System will provide a mobile tactical radio communications network. The Ground Mobile Radio (GMR) will provide multi-channel operations within integrated global positioning system capability and the handheld manpack and small form fit program, which will provide, among several capabilities, a small, form fit radio for various ground sensors, unattended vehicles, and unmanned aerial vehicles.

Our aviation platforms continue to meet tremendous challenges of today's combat environment. Continued modernization of our helicopter fleet—Black Hawks, Chinooks, Apaches—is absolutely vital to operations in Afghanistan and Iraq. And, sir, having flown in Iraq and Afghanistan in practically every aircraft that the Army is flying with today, they have performed magnificently—to date, about 3.7 million combat hours across both Iraq and Afghanistan.

As General Lennox stated, we remain committed to the requirement for a manned armed aerial scout helicopter. A formal Analysis of Alternatives (AOA) is ongoing as we continue with upgrades of the Kiowa Warrior fleet. The Army is partnering with the Air Force and fully endorses the joint force theater lift effort.

The light utility helicopter, or Lakota, continues to meet all cost, schedule and performance targets and has been fielded to the National Guard across 13 states to conduct disaster relief, counter drug operations, and institutional training missions as well as test and training centers for the Army.

Army unmanned aircraft systems are vital capability for our deployed forces. Intelligence, surveillance and reconnaissance capabilities are significantly enhanced by platforms such as the Raven, Shadow, Constant Hawk, Persistent Threat Detection System, or PTDS, as well as the enhanced medium range reconnaissance and surveillance system which evolved from the Aerial Common Sensor program of a few years ago. Additionally, the Extended Range Multi-Purpose UAV system is also on the verge of providing us a tremendous capability on the field of battle.

On another important issue, Mr. Chairman, we appreciate the support by the members of this subcommittee and Members of Congress as we work to rebuild the acquisition and contracting workforce to handle the increased workload in managing our acquisition programs as well as a number of contracted actions and contracted dollars, which in the last 15 years has increased by about 500 percent along with a subsequent reduction in the number of people.

Along with the additional workforce personnel, we thank you for authorizing five additional general officers for acquisition. We have promoted three colonels to general officer as of this date. And most recently, I served as the commanding general of Joint Contracting Command Iraq and Afghanistan. And currently in Iraq and Afghanistan today, we have Brigadier General Camille Nichols, another Army general.

So with your help and the help of the Office of the Secretary of Defense, we are working aggressively to reverse the years of decline in authorized strength levels and restore the skill level of our acquisition and contracting workforce to deal with the growing complexities of our business environment.

At the same time, the Weapons Systems Acquisition Reform Act of 2009 is helping us to ensure that our programs are healthy and that all problems are identified and program adjustments made to them to keep them healthy. By building more discipline, oversight and transparency into the process, we are better able to provide services, deliver mature technologies, and rapidly procure the equipment that our warfighters require and deserve.

Mr. Chairman and distinguished members of this Subcommittee of Air Land Forces, your deep and abiding commitment to our men and women in uniform is widely recognized throughout our ranks. We thank you for your continued support of the outstanding men and women of the United States Army and their families. Mr. Chairman, I look forward to your questions.

[The joint prepared statement of General Phillips, General Lennox, and Dr. Markowitz can be found in the Appendix on page 54.]

Mr. SMITH. Thank you very much.

Dr. Markowitz. And if you could keep your comments relatively brief, I want to make sure we give members a chance to ask some questions. I think that has been a pretty good and thorough outline of what we are talking about. If we could keep it in sort of the five-minute range, that would be great. Thank you.

STATEMENT OF DR. DAVID M. MARKOWITZ, DIRECTOR OF CAPABILITIES INTEGRATION, PRIORITIZATION, AND ANALYSIS AND TECHNICAL ADVISOR TO THE DEPUTY CHIEF OF STAFF OF THE ARMY, G-3

Dr. MARKOWITZ. Yes, sir.

Chairman Smith, Ranking Member Bartlett, distinguished members of the subcommittee, thank you for the opportunity to appear before you to discuss the Army's modernization program and requirements processes.

My name is David Markowitz, and I am the Director of Capabilities Integration within the Army G-3. The directorate is responsible for the review, validation and approval of material requirements. Additionally, we recommend overall program priorities to Lieutenant General Thurman. As requested in your letter, I will briefly highlight important aspects of the requirements process for both current operational needs and long-term programs.

Let me start first with operational needs statements, or ONSs. ONSs support the Chief of Staff of the Army's vision to build a versatile mix with tailorable and networked organizations. An ONS is a request from a commander in the field to headquarters Department of the Army for either existing equipment or new capabilities to meet unexpected mission demands.

In 2009 the Department of the Army received or was processing approximately 2,500 ONSs, requests from commanders in the field asking for more than 6,000 separate types of equipment. The vast majority of these requests were for existing Army items.

Joint Urgent Operational Needs Statements, or JUONSs, are similar to ONSs, except the request goes through joint channels. They are approved by the joint staff and assigned to a service or agency by the Office of the Secretary of Defense. There are far fewer JUONSs, but they are almost entirely for new capability development. The Department of the Army is currently working on roughly 10 JUONSs.

To ensure the Army is providing the right capability at the right time, we have regular weekly meetings with theater that review, validate and source theater needs. Over the past two years, we have created a prioritization process to ensure that our limited resources are used in the most urgent demands.

The process is timely by collapsing the requirements, resourcing the acquisition activities into a condensed synchronized effort. Based on lessons learned, the Army updated Army Regulation 71-9 this past December to codify these changes.

The Army is also taking steps to assess the material that we have rapidly fielded to support the war. The Army set up the capability development for rapid transition process. Run by our Training and Doctrine Command, we obtain warfighter feedback, including assessments by the Army Test and Evaluation Command's re-

ports, to make recommendations on what to do with the capability for the long-term.

There are three types of recommendations: incorporate into a program of record, sustain only for the war effort, or terminate. Today, the Army has reviewed 452 new material capabilities with 10 percent recommended for transition to an acquisition program, 25 percent for termination, and the remainder to sustain for the war.

As to long-term requirements, the Army is internalizing the Secretary of the Army and the Chief of Staff of the Army's guidance on implementing a cost culture within the Army. This closely aligns with the goals of the 2009 Weapons Systems Reforms Act.

We are working with the Office of the Secretary of Defense's cost assessment and program evaluation agency on announcement of alternatives, guidance and implementation. We are also working with the acquisition community to ensure that requirements from major defense acquisition programs are reassessed annually to see if certain capabilities are causing large cost growth.

Additionally, under the leadership of the Under Secretary of the Army and the Vice Chief of Staff of the Army, we are performing a series of capability portfolio reviews to set the context for modernization. This is a new endeavor recently begun this calendar year.

We are holistically examining separate capabilities like tactical wheeled vehicles or precision munitions and making recommendations to revalidate, modify or terminate requirements. The Secretary of the Army has asked that after one year we assess our progress and make recommendations for institutionalizing this activity.

Thank you, Mr. Chairman. That concludes my opening remarks, and I look forward to your questions.

[The joint prepared statement of Dr. Markowitz, General Lennox, and General Phillips can be found in the Appendix on page 54.]

Mr. SMITH. Thank you very much, gentlemen. We will in the questions try to keep to the five-minute rule, even for me and the ranking member, because I want to give all members a chance. We will go through multiple rounds of questioning, if necessary, to make sure we get all members' questions, but do want to keep it moving as quickly as possible.

And so, gentlemen, as you are answering a question, if you see the five-minute light is up, if you could try to—I mean, I don't want you to stop in mid-sentence or anything, but if you could try to wrap it up as quickly as possible, that would be appreciated.

I am going to start asking about the EIBCT program. And I guess the question we have, and I know the statement that you are not going to field anything that isn't ready to go, and yet we don't at the moment have the tests that show that most of this is ready to go, so the first question is, you know, why not just delay it for a year?

Why is there a budget request for procurement on this stuff in there? That kind of puts us back into the betting on the come problem that we had with Future Combat Systems. Why did you make that decision in this specific instance?

General PHILLIPS. Sir, great question. What we have learned from the FCS program throughout its years of development, what we wanted to do in coordination with OSD was to leverage our investment in FCS itself. So as we look forward to bringing our strategy for the capabilities packages that encompasses the EIBCT, we worked with OSD and developed a strategy at the direction of OSD, actually, to be able to field the capability as soon as possible.

So we developed the capability packages, but we know that within those packages itself, each item may not be as mature as the other items. And as General Lennox said in his opening comment, we are not going to field anything that is not suitable, effective on the field of battle for our soldiers.

Mr. SMITH. But cutting through that, I think you are saying some of it is ready, some of it is not. You are going to buy what is ready. But is that actually the case? I mean, what are the pieces of it that have tested out that you are confident right now to buy?

General PHILLIPS. Sure, we have that test that we just did for the Limited User Test (LUT) last August, last summer, for the EIBCT pieces, the network integration kit, the Small Unmanned Ground Vehicles (SUG-Vs), the Tactical Unattended Ground Sensor (TUGS) and the Urban Unattended Ground Sensor (UUGS), there were some issues that—

Mr. SMITH. I think there are about maybe three people in this whole room who understand what you just said—

General PHILLIPS. Yes, sir.

Mr. SMITH [continuing]. But that is okay—

General PHILLIPS. The small unground—

Mr. SMITH. Go ahead, please.

General PHILLIPS. The small unground vehicle, the tactical and urban ground systems, the sensors that you would use inside a IBCT. We know there are issues with them through the limited user test that we just had.

In conversation with Director, Operational Test and Evaluation (DOT&E) and GAO, we know that we have challenges that we face like, for instance, weight on some of the small unmanned ground sensors. Some of them are about almost twice the weight that they should be. We know that we have reliability challenges with some of those IBCT systems.

But what those tests have allowed us to do is understand where those challenges are. And for us, we have to design or develop fixes into those systems. We know 94 percent of the fixes associated with the limited user test last September, and right now we are in the process of implementing those fixes, so when we go through the next fix and then the next session would be a test in August of another limited user test, we will hope to have 94 percent of those issues fixed.

Mr. SMITH. Well, just so you know, the committee's going to keep a careful eye on this, obviously. We are very early in the process. You know, it will be a while before we passed the final bill. But, you know, our inclusion of these items is going to depend on our confidence as well as yours about what is going to be fielded and what is not going to be fielded.

The other question about some of these components, the new components, is some of them are very expensive, much more expen-

sive than what they are replacing. And, you know, we have to sort of measure the capabilities versus cost. Are we really getting that much more capability?

And one example that has been brought to my attention is the unmanned aerial system (UAS) for the EIBCT will cost \$360,000 each when the Army's current similar system, the Raven UAV, costs \$17,000. You know, basic question is first of all, do you accept those numbers as being roughly accurate? And if so, then basically what you are saying is this new thing is going to be 21 times better than the old thing, to use a technical term. Is that really the case?

General PHILLIPS. Sir, I would answer part of this and then let General Lennox take it from there.

Mr. SMITH. Yes.

General PHILLIPS. But you have to look at the maturity of the program as well when you compare one to the other and the capability that it provides. Raven is a very mature system. I think we fielded well over 800 of those in theater already flying today.

And the Class I UAV is still in development as a part of the EIBCT, so when you are early in development, some of those systems are going to be expensive, but as you go forward into more toward full rate production, the costs of those systems are going to certainly be reduced. And then it is a measure. You hit it right on the head—the capability that it provides versus the cost, because that is the balance that you have to achieve.

Mr. SMITH. Just off the top, what is the increased capability here with this UAV versus the old one?

General PHILLIPS. Sir, the current Class I UAV weighs about 17 pounds. It provides you a hover stare capability. It is not a fixed wing like the Raven, so you can hover over a certain location, and you can just get the stare down capability with that UAV. It is relatively easy to fly with soldiers. It has been tested in a test environment at Fort Benning, at Yuma and many instances.

Soldiers like this system. It provides them great ISR capability, great situational awareness of what is happening on the battlefield, to fly over a building and to hover and give that stare down capability. Great situational awareness, sir.

But there are issues with that system. One is the noise. It is a noisy system that we need to reduce the decibels on the field of battle. That was one of the issues that came out of the recent LUT is how can we reduce the acoustics associated with this vehicle.

Mr. SMITH. Okay.

General, did you have anything quickly? I am out of time, but—

General LENNOX. Sir, I think General Phillips covered it.

Mr. SMITH. Okay. Great.

Mr. Bartlett.

Mr. BARTLETT. Thank you.

My first question is a follow-up to my opening statement for either General Phillips or General Lennox. Could you comment on the Army's research and development funding in the near term and far term? Specifically, could you give us an idea of how the Army is leveraging capabilities from its science and technology budget?

I would also like to ask you to provide the committee with an assessment of how the Army might use additional funds for research and development, if they were made available.

General LENNOX. Sir, thanks for your question. The Army has kept over the last several years research, development, test and evaluation funding at about—RDT&E funding at about the same level, so it has been consistent over the last couple of years.

We think the amount that we are asking for in fiscal year 2011 is adequate. We have had remarkable successes, as you know from your background, in the investments we made in Science and Technology (S&T) and some from Fort Detrick, as you are well aware, the investment in some of the bandages and work that the Medical Research Command did there in adding capabilities to help stop and staunch the loss of blood very quickly.

There have been a number of systems and capabilities that we have taken to the battlefield that have come out of our S&T program, a lot of work on future armor capability. So it is very important to us, and we think we have about the right amount, sir.

General PHILLIPS. Sir, I would just add a couple of things. One is OSD has been working with us very closely, and they have designated the Army in a couple of areas to be able to focus on key things. One is focal plane array for Infrared (IR) high definition. We have the best sensors on the battlefield today. With this S&T investment of about \$93 million, which brings up to about \$160-or-so million this year in this kind of technology, it will ensure that we have the edge for our soldiers that are using the next generation of IR sensors.

The other one that I would share with you, sir, would be force protection. Our investment out of that \$1.9 billion that General Lennox just mentioned, the majority of that will go into force protection systems. The OSD has designated the Army as the deployment force protection task force lead, and we are going to invest about \$170 million in that effort alone.

Mr. BARTLETT. Thank you.

I have a second question for Dr. Markowitz or General Lennox. During our Air Force posture hearing, we had an opportunity to discuss the Joint Cargo Aircraft (JCA) program with General Schwartz. I still have some concerns about the ability to meet the original validated Army Joint Cargo Aircraft requirement, which I believe was for 78 planes.

In a series of hearings, no one has said that that requirement has gone away. As you know, the Quadrennial Roles and Missions Review released last year clearly stated the option that provided most value to the joint force was to assign the C-27J to the Air Force and the Army. As you may know, the Army uses its plane. The Air Force has the plane. We now are going to have only 38 planes. There is a clearly validated use for that plane in this country by the Guard for national security issues.

And my question is how are we going to meet the Army's originally validated needs of 78 planes, plus the stateside needs was only was only 38 planes?

General LENNOX. Sir, you are right. The actual Joint Requirements Oversight Council (JROC) approved number is for 75 Joint Cargo Aircraft. There was a commitment for 78. The Army had

said they would buy 54, and I believe the Air Force would buy the remainder. And currently, when that program transferred to the Air Force, I think it currently stands at about 38 aircraft, so I think you have all the facts correct.

We in the Army believe we have a requirement for the direct support role of fixed wing aircraft. We have had a recent pilot interact that has demonstrated that this has proved tremendously successful. There are two C-130s that the Air Force has dedicated to a Combat Aviation Brigade, proved tremendously successful, and we are waiting for the combatant commander in Afghanistan to ask for that capability.

Mr. BARTLETT. The original 78 planes—there has been no study after that to indicate that the Army requirement is in fact anything less than the original 75, 78 planes, correct?

General LENNOX. Not that I am aware of, sir.

Mr. BARTLETT. Thank you very much.

Mr. Chairman, the Army continues to say they need 78 planes. The program has been transferred to the Air Force, who didn't want the program. They now have only 38 planes. Clearly, the needs of the Army cannot be met with this, and this provides us with a continuing challenge. Thank you very much.

Mr. SMITH. Thank you very much.

Before I call on Mr. Kissell, I just want to follow up briefly on something I asked earlier when we were talking about the cost of the new UAV. I get that as you build them over time, you have the possibility of the cost getting down. I would note that apparently we have committed to nine brigade sets of that UAV, and the average \$260,000 cost is for all nine.

So that is pretty far out down to the right before we start to see that coming back down, so I would be interested in—not now, but perhaps a better explanation for how that additional cost is justified, because that piece of it doesn't seem to help that much in this particular instance.

Mr. Kissell.

Mr. KISSELL. Thank you, Mr. Chairman. And I would also like to join the ranking member in welcoming you to your new capacity with our committee as our chairman, looking forward to working with you.

And, gentlemen, welcome to our committee. And I have two or three questions, and I really hadn't figured out who is best to answer them, so when I ask the question, whoever wants to jump in, I would appreciate it.

We had a full committee hearing this morning. We had commanders for European Command, Africa Command and the Joint Forces Command. Two of the three commanders cited as one of their big concerns is cyber security. Just wondering what are we doing in technology and procurement and development to alleviate these concerns.

General LENNOX. I think we are looking at each other, because we don't have a very good answer for you, sir. But let me start. The Army is committed to the Department of Defense's stand up of Cyber Command, and we have recently signed up for Army Cyber Command. So we will be standing up a three-star headquarters dedicated to this effort.

I think that I will have to take for the record, unless someone else has a better answer on the specific cyber kind of procurement things that we are doing to support that effort.

[The information referred to can be found in the Appendix on page 113.]

Mr. KISSELL. I would appreciate that very much.

It was mentioned in one of the opening remarks about the National Guard. I am from North Carolina, and our general, General Ingram, and who is head of our North Carolina Guard, was with me today, expressing some concerns as we bring into these Army aviation brigades that where is equipment going to come from to supply these additional demands?

He had heard rumors along the line that we would either be taking the equipment from existing Guard capabilities or they would be shut off from new equipment until these brigades were, you know, fully supplied. I think you did mention that there would be, like, 11 or 12 percent increase in equipment going to the Guard. What can I tell General Ingram so he won't have to worry about this?

General LENNOX. First, sir, General Ingram has done a remarkable job with the North Carolina Guard, and their deployments and soldiers have done a fantastic job in combat. My compliments to you and to your state's National Guard team.

We are standing up two Combat Aviation Brigades. The 12th Combat Aviation Brigade is a collection of currently existing active component units that we are putting together and fielding to deliver a capability to alleviate the heavy demand in combat of aviation requirements. That is happening right away out of current assets.

The 13th Combat Aviation Brigade has been fully funded over the program to be fielded in fiscal year 2017. The Secretary of Defense has asked us to come back to see if there is a way to expedite fielding that capability either through early procurement or through a combination of pooling assets from both the active and reserve component forces that can get that capability for the Nation to deploy faster.

It is our commitment to every Guard unit that we will modernize their equipment. And in the end, if there is a Secretary of Defense approved borrowing action under 1225.6, we will note that, and they will be reimbursed with planned and programmed aircraft.

Mr. KISSELL. So I can tell General Ingram that it is going to be okay.

General LENNOX. I believe so, sir.

Mr. KISSELL. Okay.

Last question. We have from time to time people come to us with good ideas. And they are kind of research and development. I share the ranking member's concern that if we don't fund the R&D at a high level, that it is just very shortsighted.

We have had people come to us with ideas, and these are very legitimate ideas on how to make body armor stronger and lighter in weight, a more of a classified nature of vehicle that the Army is looking for, and an idea that would help our equipment engines last longer. What do I tell these people? How should they proceed

in getting these ideas listened to and for you to become aware of them so that you can be aware of these good ideas?

General PHILLIPS. Sir, that is a great question. And what I would ask is that they engage with us in the acquisition community. At various times for various systems, we will send out requests for information, and we will run industry conferences.

And we have program executive offices (PEO) that exist all throughout our Army that manage programs. Well, today we manage over 700 programs. One of those is PEO Soldier that you mentioned about body armor. We are always looking for industry, to talk to industry and have them interface with us and to provide us their feedback.

For GCV we held two industry conferences—Ground Combat Vehicle—two industry conferences where we got about, I think, about 40 or so, maybe more than that, white papers back from industry. We welcome industry's input into our processes, sir. And if you have someone in particular that you would like us to talk to, we would certainly be glad to chat with them.

Mr. KISSELL. We will follow up.

And thank you, Mr. Chairman.

Thank you, gentlemen.

Mr. SMITH. Thank you.

Mr. Hunter.

Mr. HUNTER. Thank you, Mr. Chairman.

And thank you, gentlemen, for being here today and thank you for your service.

Talking about the M4, I just want to stick with that. If it is shown that we need a new weapon and that we are going to replace the M4 or the M16, the issue that I have, basically, is that Title 10 limits companies allowed to bid on critical small arms components for specified small arms, including the M4. You know this. There are three companies right now that are allowed to bid based on Title 10.

One of those companies makes the Ma Deuce. The other two can't compete for small arms. Out of those two that are allowed to actually compete for small arms, one of those is a foreign company, a Belgian company. So there is only one American company that can compete with itself, I guess, being the one American company, if you want an American manufacturer for either the upgrade to the upper receiver of the M4, which we are thinking about doing, if needed, or for a brand-new replacement for it.

Last year the National Defense Authorization Act (NDAA) again required a report on the small arms industrial base while also giving the Secretary of Defense the authority to expand, modify or change the companies in small arms production in the industrial base.

I understand that in December the Army denied entry to one or more well-known domestic small arms companies, including the largest gunmaker in the entire nation. The largest gunmaker in America was excluded as a small arms option for the M4.

Based on the changes made in the fiscal year 2010 NDAA to expand or modify the companies in the small arms production industrial base, can you explain why the Army is not embracing competition? That is my first question—two more to follow here.

Have you urged Secretary Gates to modify or change the companies in the small arms production industrial base? And lastly, are you confident that by limiting competition, if your answer is no to those first two, are you confident that by limiting competition to these three companies based on a decade-old study, that our soldiers and Marines and pretty much everybody in every service, as we are all going to use the same thing pretty much, are you confident that they are getting the best bang for their buck and that the American taxpayers are getting the best bang for their buck, too?

General PHILLIPS. Congressman, thank you for your question and thank you for your service.

A couple of points. The M4 is an extraordinary weapon today. We have continued to improve it. Over 400,000 have been fielded today. It performs extraordinarily well in theater. In my 11-plus months there, I heard one complaint, and it was from a division commander about the magazine on the M4.

Mr. HUNTER. Sir, I don't mean to interrupt. I like the M16 and the M4. I have shot targets at 500 meters away in the, you know, prone position. I am a triple expert rifle, pistol. I like it, too. What I am saying is, if we have to upgrade it, if Congress or DOD or you deem that it is necessary, then what? Those are where my questions go here.

General PHILLIPS. Sir, got it. And our dual strategy, really, is to, number one, upgrade the M4 as we know it today. And we believe that we, do a full and open competition process, we will be able to upgrade the M4, which will add to the already 62 improvements that we have made over time to that weapon system.

The other piece of the dual strategy is to go out with full and open competition for what might be the follow-on to an M4. And the capability development document is being drafted now.

We think that the ammunition—or, I am sorry, the small arms industrial base is very robust and that there will be adequate competition there. And we know that in the previous National Defense Authorization Act that on the 31st of March of this year that the Secretary of Defense will have the authority to actually waive some of those requirements so we can go forward with full and open competition, sir.

Mr. HUNTER. Have you urged him to waive those requirements to allow more than one competitor into the open competition?

General PHILLIPS. Sir, we have not at this point. The study that you mentioned earlier in one of your comments is being prepared now within the Army. The reason it took a little bit of time is because we had to go out to about 14 different organizations that have a stake in the weapons systems that we are preparing. It wasn't an easy task just internal to the Army. We had to go out to get that information. And we should have that back to OSD near-term probably within the next 30 days, sir.

Mr. HUNTER. Thank you, sir. And, you know, basically what we are looking at here is if you only have one competitor—it is a great company, by the way; it is a great rifle that we have now—but it is not competition if you only have one company competing for it.

I don't think we ought to allow a foreign company also to be making the next carbine, if we choose to make it or to upgrade the

one that we have now. I think it ought to be an American company, and I think we ought to do everything in our power to urge Secretary Gates, and your power as well, to let all of these great American small arms manufacturers into this fight. But thank you.

Thank you, Mr. Chairman.

Mr. SMITH. Thank you.

Mr. Marshall.

Mr. MARSHALL. Thank you, Mr. Chairman. I am going to just make a few brief remarks, and then I am going to yield the balance of my time to Mr. Bartlett.

JCA C-27—I am not particularly troubled by the fact that the Air Force has been at least given the maintenance, sustainment, modernization end of this, since Army just was fixated on contractor base services and doesn't really have the interest or capability to do depot work on something like this.

The Air Force can do that. And I suppose the Air Force could have the platform as long as it is providing Army with the services that Army needs and in the way that Army needs those services provided.

And the challenge that we had in Vietnam, and certainly history suggests it is not going to work real well if what we get now is what happened in Vietnam, is that where lift is concerned, at least, the Air Force has a strategic view and where this kind of lift is concerned, Army has a very tactical view. And that clash did not serve us well with—was it the Grizzly? I can't remember the platform in Vietnam.

General LENNOX. Caribou, sir.

Mr. MARSHALL. Caribou? And ultimately, we concluded that Army had to have the platform.

To what Mr. Bartlett previously said about requirements, I would simply add that the latest study I am aware of is Institute for Defense Analyses's (IDA) analysis of different mixes of lift, given different kinds of challenges. And if we believe that we are going to have these kinds of long-term, simmering conflicts in the future, IDA concluded that we didn't just need 78. We needed 98 of these things to be most cost-effective across the board.

So I hope Army is thinking about more than 38 in the future here, even if Air Force happens to have the platform, you know, temporarily or permanently, because it seems to me Army's view is more than 38, based on all Army has said thus far. And then IDA chimes in and, at least for the conflicts that it looks like we are going to be in for a little while, says it should be even more than that.

And with that, let me just transfer it back to Mr. Bartlett.

Mr. BARTLETT. I thank the gentleman very much for yielding. I would first like to identify myself with the concerns of Mr. Hunter. You can't have a full and open competition if you have excluded many of the potential players. I have no idea why we have done this.

Back to the Joint Cargo Aircraft, specifically I would like to know how the Army is currently meeting this requirement in Operation Enduring Freedom (OEF). For example, what is the impact to the sustainment and availability of the CH-47? I understand that because we don't have enough of the Joint Cargo Aircraft, we are now

using helicopters and commercial rented, leased aircraft to meet these needs. Is that correct?

General LENNOX. Sir, it is correct. There are record uses of the CH-47 in Afghanistan. It is a climate and an area that lends itself to helicopters, but there are record uses of the CH-47, and that is putting quite a burden on the fleet. And there is contract aircraft being used to the tune of about \$8 million a month, I believe. But I will follow up specifics on the amounts.

I think it is up to the combatant commander to some extent, so I don't want to necessarily say that this is the right solution or it is not the right solution. The combatant commander gets a chance to say, request what kind of airport support they need based on what they see in their theater.

Mr. BARTLETT. But when he runs out of Joint Cargo Aircraft, then he has to use something else, correct?

General LENNOX. Sir, right now there are C-130s being used. I don't think we have yet deployed our first Joint Cargo Aircraft to Afghanistan. I think that won't happen until next year. And we are using a combination today of C-130s in small numbers and contract aircraft and relying on the CH-47 Chinook.

Mr. BARTLETT. But aren't many of the airstrips there pretty short, so that we are limited in where we can use the 130?

General LENNOX. I am not an expert, sir, on the C-130 and the airstrip constraints there. I do know that there was infrastructure constraints there in terms of how much room there is on the ground. And I do think that affects how many C-130s you can bring into theater.

Mr. BARTLETT. Yes, it is my understanding that in Afghanistan the Joint Cargo Aircraft is even more essential because of this infrastructure availability. Thank you very much.

Thank you, Mr. Chairman.

And thank you for yielding, sir.

Mr. SMITH. Thank you.

Mr. Coffman.

Mr. COFFMAN. Thank you, Mr. Chairman.

I understand that we are going to have a hearing, upcoming hearing, Seapower Expeditionary Forces Subcommittee, where we will be discussing force protection issues, but since the Army has the preponderance of folks on the ground, I would like to ask some of your views in terms of modernization.

First one would be the helmet. I understand that our current Kevlar helmet does not protect against 7.62 mm. And I wonder if you could first address what is being done there.

General LENNOX. Sir, I would like to not talk about the specifics of what the helmet can and cannot do. We are looking at a more capable version of the helmet in concert with the Marine Corps. The initial effort, I understand, has run into some challenges in terms of meeting those requirements, so it has been delayed a little bit. But the Army is after providing at the same weight, so we don't add weight to the soldier load, a more capable helmet.

Mr. COFFMAN. Where are we at right now in terms of reducing the load requirement in terms of the protective vest?

General LENNOX. Sir, we made substantial requirements since I testified before this committee last year. The IOTV itself, the im-

proved outer tactical vest, is lower in weight than the earlier version of the outer tactical vest by, I think, about three pounds.

The plate carriers that are designed specifically for soldiers to wear in high altitudes in eastern Afghanistan, for example, dismounted soldiers that will be climbing hills, that is about six pounds lighter. And we have fielded those now in substantial numbers.

In addition, we have done things like improve the boots, improve the vest, and improve some of the machine gun weight. So we are trying everything we can to take some of that weight off the soldiers.

General PHILLIPS. Sir, the only thing I would add to that is that we are trying to give the commander options as well, so depending on what kind of environment they are in. Obviously, they are in combat. You want the maximum number of protection. But if they are back on a forward operating base, then you might need a lesser level of protection, so you might go from 31 pounds, pull a couple of plates out and go down to 25 pounds.

Mr. COFFMAN. Would that be taking out the side Small Arms Protective Insert (SAPI) plates? Very well.

In terms of we take casualties through snipers, and the preponderance of casualties, I think, in Afghanistan are through snipers and through IEDs, roadside bombs, can you tell me—in terms of modernization we were talking about various ISR platforms. Is there anything on the horizon to provide better force protection for our folks on the—for our soldiers and Marines on the ground?

General LENNOX. Sir, the Army is committed to tackling the common IED problem where we do receive most of our casualties. And as you know, there is no panacea. We have recently fielded the MRAP ATV vehicle to provide enhanced protection and off-road capability, thanks to the help of Congress and the Department of Defense.

We have fielded a number of efforts to enhance ISR. Task Force Observe, Detect, Identify, and Neutralize (ODIN)—Afghanistan, which was very effective in Iraq, is now fielded in Afghanistan. A number of different ISR platforms are being fielded. Human terrain teams are out there trying to make a difference, and ground clearance vehicles have been taken from Iraq, where the instances are lower, and moved to Afghanistan. So there is a full court press in a number of different ways. It has not solved the problem, but I think we have made dramatic improvements.

General PHILLIPS. Sir, I would add to that that we have fielded systems like the Persistent Threat Detection System. There are six of those in Afghanistan. I have watched them personally operate in Iraq inside the headquarters, and that gives a forward operating base a tremendous capability to protect against threats that exist within a few kilometers of the forward operating base (FOB) itself.

You mentioned sniper. As a part of our investment in S&T, we are going after trying to see if we can defeat the sniper by acoustics, and some of those are classified programs—

Mr. COFFMAN. Sure.

General PHILLIPS [continuing]. That we are going to push forward to try to go after that threat in particular.

Mr. COFFMAN. Thank you, I—

Yes, did you have a——

Dr. MARKOWITZ. Yes, sir, it is just that we have worked very closely with OSD. They have had a special task force on counter IED activities. We work closely with them and with theater.

There is a large list of new and improved capabilities that we are working, all the ranging from more persistent forms of stare to different types of explosive detections, chemical sniffers, to different types of Tactics, Techniques, and Procedures (TTPs) and contractors in the field to kind of help the linguists and those other areas of identifying and targeting the IED network. So we are looking across the full range, sir.

Mr. COFFMAN. Mr. Chairman, if I could, one comment? And that is that I think we have learned one thing, and we cannot up-armor ourselves out of this, you know, in terms of protecting our soldiers and Marines on the ground. And so I think really we obviously need to focus on ISR capabilities. Every time we increase, you know, the weight of our vehicles, they increase the size of their explosives.

Thank you, Mr. Chairman. I yield back.

Mr. SMITH. Thank you.

Mr. Wilson.

Mr. WILSON. Thank you, Mr. Chairman.

And thank you all for being here and thank you for your efforts in modernization.

And I appreciate so much the service of Congressman Coffman. He served, and so as he discusses the issues, he is telling you from his experience in the combat theaters. So I appreciate him so much.

On the other hand, I just went through training, and that is at the National Training Center. It was an extraordinary experience 10 years ago, and I tell you this as a compliment. All of the equipment I have is in a museum, and so from the boot to the helmet. And so I just want to thank you all for expediting.

And I want to join with Mr. Kissell that as people bring innovations to us, I know we want to get these to you as quickly as possible. And in particular, I have been very intrigued at initiatives brought to my office concerning fire suppression capability. And that concerns me so much with, as indicated by the munitions, but virtually anything to reduce the possibility of just the heinous nature of fire.

Could any of you comment on what is the latest on that? And what can we do to help you?

General PHILLIPS. Sir, I share your concerns about that, and my old boss, who is Dr. Markowitz's boss, is Lieutenant General Thurman, and he underscored enough that we have to do everything possible to limit the impact of fire and the damage that it does to our soldiers.

On each vehicle there are multiple ways of addressing it to aim at protecting soldiers. First and foremost is the fielding of the fire resistant uniform. We have done that in the old version. As we are about to produce another uniform, fire resistant will be the very first thing to go into it.

We are experimenting with different kinds of limits to protect the soldiers now so that—they wouldn't wear the old hoods; too heavy, too hot—so we are experimenting with lighter variants.

On each vehicle there are about three different ways to suppress fire. First is the optical sensor that senses fire and automatically shuts off the fuel and reacts. Because of complaints, comments, lessons learned from theater, we have added external fuel cutoff valves that a first responder at the scene can pull this, if the fuel has not been cut off, and cut the fuel out.

And then as we build our vehicles, and especially our heavy trucks, we have added things like blankets and fire resistant coatings around the fuel tanks. And those are all some of the things that we have done. I think we have done some extensive experimentation. There have been people with ideas. I think we have looked at every idea that has come forward, and we welcome an opportunity to do that again, sir.

Mr. WILSON. And how would we, if people bring innovations to us, how could we expedite that—not show favoritism as much as to promote the protection for our troops?

General PHILLIPS. Sir, a couple of ways, and I will go back to my earlier comments. We have various program executive offices. Offices that may have responsibility for that: Aviation in Huntsville for aviation systems, Tactical Wheeled Vehicles up in Warren. We have the Rapid Equipping Force that would welcome any industry partner who has an idea that could bring that forward.

We welcome those ideas, because as General Lennox said, what we do today is not enough. We must do better tomorrow to protect our soldiers and give them the best equipment. And that includes fire protection. As an aviator for 30 years flying in helicopters, you sort of grow up thinking about fire, because helicopters, if they crash, they are probably going to burn.

We have the same kind of mentality now, I believe, in our tactical wheeled systems and our other systems, and we need to continue to grow the same kind of protection inside of them. We welcome industry's ideas. If we can help with anyone in particular, sir, we will gladly engage.

General LENNOX. Send them our way, sir. We will get them to the right people.

Mr. WILSON. Well, and I appreciate that. And it is not just for me. I obviously would want it for every Member of Congress as people bring in innovations to us.

And since I have only got 30 seconds, I also want to thank you all for promoting unmanned aerial vehicles. I say this as a parent. I had two sons serve in Iraq, and I always hoped that there was a UAV overhead. And so the technology that has been promoted and presented for our troops, we as American citizens appreciate that, and I only want more, so for our troops.

Thank you very much. I yield my time.

Mr. SMITH. Thank you.

Mr. Platts.

Mr. PLATTS. Thank you, Mr. Chairman.

First, I want to just thank all of our witnesses and especially thank you for your service. And the work you do is so important. As Congressman Wilson just said, what you are doing truly is

about the safety of our troops on the ground and those in uniform. You, both generals, you certainly appreciate that more than I can.

On this specific follow-up to Mr. Kissell and Mr. Wilson, if it is possible, because I think we all have that opportunity where an industry in our districts comes to us and says, "Hey, we have got a great new idea, state-of-the-art," if it is possible for the record back to the committee to share in your offices who would be the right person or person and so we all have that, and then we can just direct.

That would be wonderful with my district, central Pennsylvania, heavy manufacturing base and a long history of support, industrial, military industrial, BAE Systems, General Dynamics. Going way back, my brother, who runs forklift at Harley Davidson, when he started there he was on the bomb line at Harley Davidson. Not many people knew there were bombs casings being made in the same factory as bikes, but that has now moved on elsewhere.

The specific question—Mr. Hunter kind of touched on the M4 issue pretty in detail, and Roscoe, Mr. Bartlett, followed up on the importance of that competition being healthy, engaged—is there any more detail on the specific timeframe of the upgrades versus the Request for Proposals (RFP) for the new version, or the, you know, the advanced, you know, next stage, where we stand on that?

General PHILLIPS. Sir, we expect in the next maybe up to 60 days or so, but within the next 60 days, we anticipate that we will get the RFP out for the upgrade to the M4 carbine, the upgrade competition.

I think when we went out for a Request for Information (RFI), we got over 20 responses back from industry, so we are pretty confident that we have the capability out there with a robust industrial base, that we will be able to accomplish the upgrades that we want for the——

Now I will transition to the actual competition for another, the follow-on, the next generation, per se. And that critical—or that capability development document is still going forward to the Joint Requirements and Oversight Council. We would like to get it out this fiscal year, but I can't commit to you that we will be able to do that until we get the requirements through the process to OSD and vetted. And then we will get the RFP on the street as soon as possible.

If I could also state, we want full and open competition for this new system, so that is what we will go forward with and that is what we will present to OSD as well, sir.

Mr. PLATTS. Okay. I appreciate that and the emphasis on full and open, and probably goes without saying that we got great American manufacturers here that—full and open so American jobs are created as we go forward with that new version.

And did I understand correctly that one of the challenges has been that 14 different entities—it is not just the Army, but who you are partnering with in the other branches and that use the same weapons platform?

General PHILLIPS. Sir, many, many services, Special Operations Command (SOCOM), Marines, others use our weapons. And a lot of the systems that we buy are used by the other services. Another

example away from small arms, but ammunition, single manager for conventional ammunition is PEO Ammunition at Picatinny Arsenal. So our Army program executive office buys bombs and bullets and other ammunition systems for the other services.

So many of the requirements that we have today that we have worked within our acquisition process are actually borne joint before the requirement is ever approved. I hope that answers your question, sir.

Mr. PLATTS. Thank you. And just a final comment on the M4. It is not the 7.62 mm, but my 13-year-old's Christmas present that he was just hoping for under the tree was the .22 caliber version of the M4 that does shoot wonderfully. We target shoot a lot, and so another vote of confidence in the M4—different caliber, but a great weapon.

So appreciate the advancements that you are doing and ultimately how that does translate to the men and women out there in harm's way, us doing everything we can. And my thanks, if you can convey back to your staffs, both civilian and uniformed, in the important work you are doing on that acquisition and research development and all of that. It is so important to protecting our heroes out there, so—

General PHILLIPS. Sir, you bet. Will do.

Mr. PLATTS. Thank you.

Thank you, Mr. Chairman. Yield back.

Mr. SMITH. Thank you.

Actually, I will follow up on that and ask what is sort of the—what I think the logical is here, that if the M4 is performing so well, why are we having a competition to go out and try to build a new rifle? And as I understand it, you are also looking at ways to update the current M4. So I am worried that this has been sort of—it was pushed a little bit politically, because there were some stories about the M4 not performing well.

And to your credit, to the Army's credit, now, you did a thorough investigation of whether or not that was happening. And the answer that seemed to come back was that, no, it is not happening, that, you know, every weapon that we are going to put out there could, you know, potentially it won't perform perfectly. There will be problems.

But relative to any, you know, comparable study of the effectiveness, the M4 is, as Mr. Hunter, who has operated it, pointed out, it works. And yet after all that, the result is we are going through, you know, what is going to be a somewhat costly study to try to look at an alternative. And I agree with the comments of my colleagues about if we go through that process, we do want to make it as open to competition as possible. My question is why are we going through that process?

General LENNOX. Sir, I think the Secretary of the Army decided about this time last year to commit to a full and open competition as a result of some of the concerns that you mentioned. The current system can compete against that, so we think that the outcome of this, you know, the M4 was stand on its own or not, or it might encourage innovation so something better could come from it, so—

Mr. SMITH. So it is possible that you go through this process analysis of alternatives, analysis of ways to retrofit the existing M4 and you say, "You know what? We got what we want. We are going to stick with it."

Okay. That is helpful.

General LENNOX. Absolutely, sir.

Mr. SMITH. That definitely answers that piece of the question.

I had mentioned in my opening statement about the backlog of trucks that are completed, but not being shipped where they are supposed to go. Could you talk a little bit about that?

General LENNOX. Yes, sir. There are about 5,000 medium tactical vehicles now at a plant in San Antonio awaiting shipment. Most of those came about because as the truck was being developed, we asked for an armored cab. And we did our testing simultaneous with production, so we discovered things in the testing that then had to go back and be modified in the truck before it can be accepted, so—

Mr. SMITH. Trucks aren't actually—they are not ready.

General LENNOX. They are not ready. Those are not ready.

Mr. SMITH. Okay.

General LENNOX. We have heavy trucks. We have about 14 heavy trucks that also have to undergo some modification, minor modifications before they are accepted. They all have distribution instructions so that the minute they are ready and accepted by the Program Manager (PM), they are capable of being shipped.

Mr. SMITH. Okay. And just could you walk us a little bit through in more detail the Stryker decision on, you know, upgrading them, you know, to making them, basically up-armor them so they can survive blasts, if they happen to come across one?

And specifically, one of the questions that in talking to a number of people about this I have not had 100 percent clarified is if we decide to go with this double-V format—personally, as a proud University of Washington graduate, I think they should have called it a W but, you know, nothing is perfect—if they do in fact do that, is it possible—and I think in speaking with you gentlemen, I think you said it wasn't—to put that new hull on the existing Strykers?

Or would it have to be simply, okay, we are going to change the Stryker going forward? I mean, that is one of the big questions I have about this proposal.

General LENNOX. Yes, sir, you have got it exactly right. It would require a completely new hull, so it is a new production vehicle.

Mr. SMITH. You could not put it on the existing—

General LENNOX. You cannot retrofit it, sir. I think they have tried to do some of that, and they found out that the welding—you don't sustain the same force protection when you do it.

I would like to compliment the members on their encouragement of innovation and ideas. GD is the one—General Dynamics Land System actually came up with this idea for the double-V shaped hull, brought it to us. And that was in January, and now this is March, and I believe the Secretary of the Army or Assistant Secretary of the Army for Acquisition, Logistics and Technology has sent this forward to OSD.

Our goal is to produce the test vehicles. If they work, we have one brigade set of vehicles that we sent to Afghanistan and put it in the hands of our soldiers, sir.

Mr. SMITH. And that is the goal of this committee is, you know, as I mentioned in my opening comments is the Stryker is great in many ways. If there is a way to make it more survivable and better protect our soldiers, you know, on our committee we want to get those out there as quickly as possible, so we want to work on that.

I did have a—I will ask just one more question and see if any more members have. Could you talk about the Humvee recapitalization program a little bit, what your plans are, because I understand your plan is not to build any new Humvees, but there are looks—you are looking at ways to update the ones that we have? Can you walk us through what your plans are on that?

General LENNOX. Yes, sir. The Army has met its acquisition objective on Humvees, so we have actually accelerated stopping the buying of Humvees a couple of years early, somewhat influenced by the fact that in theater commanders are reluctant to let soldiers go out because of vulnerability of the Humvee. We have—

Mr. SMITH. They are relying more on the Stryker and the MRAP. Is that—

General LENNOX. Yes, sir. Exactly.

Mr. SMITH. Okay.

General LENNOX. We have in fact requested funding in the 2011 OCO bill to start a recap program for Humvees. We have currently a recap program that is about to end at several of our depots. So what the Army is wrestling with now is how to bridge the capability between the ending of that program this year, maybe early next year, and the 2011 funding that we are requesting.

Our plan is to recap some of the oldest Humvees and make sure that we bring them up to a capability where they are useful until we can bridge them into the JLTV of the future.

General PHILLIPS. Sir, if I could add just to that very quickly, we are going to issue the—really, the last order for Army Humvees this month to AM General. And that is going to happen actually probably in the next few days. However, on the horizon, our emerging requirements from other services, we have over 150,000 Humvees operating in the Army today, other services, Special Operations Command, foreign military sales.

So what we know that are emerging requirements on the horizon will probably keep AM General and producing new Humvees probably through the first couple of months of fiscal year 2013 not through Army orders, but through Foreign Military Sales (FMS) and other services.

Mr. SMITH. I would be really curious to pursue that. And I am way over time here, but to find out, you know, if the Humvees aren't actually being used, and you mentioned a couple of other areas where they might be, you know, building more of them, recapitalizing them, I mean if we are doing that on a program the military is reluctant to use, I would really want to look closely at the wisdom of pursuing that. So we will follow up on that more.

Sorry—just turned myself off.

I do want to get the second panel up here, but I also want to respect members. I am not going around to everybody, but I will give

Mr. Bartlett a chance to ask further questions, if he has them, and I will just sort of ask if any of the other members have anything for the good of the order they want to add to this panel.

Mr. BARTLETT. I just have one comment, Mr. Chairman. It was fairly obvious, I think, to almost everybody for a number of years that Future Combat Systems was in real trouble. And, you know, we have to find some way to pull the plug earlier before we spend extra billions and billions of dollars. I hope that somebody is looking at this as a model on how we can do better in the future. Thank you.

Mr. SMITH. An outstanding point. Thank you.

Any other members have anything further for this panel?

Mr. Marshall.

Mr. MARSHALL. First, I apologize. Thank you for service. And secondly, to just chime in with Mr. Bartlett, we ought to know that a proposed weapons system is in trouble when we cannot explain it in a way that, you know, normal Members of Congress can understand.

And the Future Combat Systems was this evolving thing that nobody ever really understood. We just shouldn't even come forward with things that we can't present with some specificity. It is really unfortunate, because we did waste an awful lot of money trying to pursue that before it got killed.

Thank you, gentlemen.

Thank you, Mr. Chairman.

Mr. SMITH. Thank you.

Any other members' comments?

Well, thank you very much. Appreciate your service and your testimony. And we look forward to working with you on all these very, very important issues.

With that, we will go to our next panel, Dr. Michael Gilmore and Mr. Michael Sullivan. And we will take a brief break here while we are waiting for people to change positions.

Mr. SMITH. Looks like we are about ready to go. I will give you gentlemen another extra minute there to give folks a chance to take their seats.

Thank you very much. We have introduced our witnesses earlier, but I would do it one more time. Dr. J. Michael Gilmore, who is the Director, Operational Test and Evaluation Office of the Secretary of Defense, and Mr. Michael J. Sullivan, Government Accountability Office, Director of Acquisition and Sourcing.

And, Dr. Gilmore, my understanding is that you are going to go first. You may proceed.

STATEMENT OF DR. J. MICHAEL GILMORE, DIRECTOR, OPERATIONAL TEST AND EVALUATION, OFFICE OF THE SECRETARY OF DEFENSE

Dr. GILMORE. Thank you. Thank you, Mr. Chairman and members of the committee.

At your request I am here today to discuss test planning and test results for the systems composing Increment One of the Early Infantry Brigade Combat Team, or EIBCT, as I will refer to it, as well as test planning results for selected components of the Joint Tactical Radio System, or JTRS program, as well as results from

testing of the Army's Extended Range Multi-Purpose Unmanned Aerial Vehicle System, or ERMP. So I will just go through those in turn.

Beginning first with the EIBCT, the Army conducted what they called a limited user test, which is a test under fairly operationally realistic conditions.

Mr. SMITH. I am sorry. I forgot to do this with the first panel as well. You have submitted statements for the record. Those statements will be read into the record, and you don't have to read the whole thing. We will put it into the record. You summarize as best you see fit. Thank you.

Dr. GILMORE. Okay. And that is what I am doing. I am not planning on reading all of that statement that I submitted.

The Army conducted a limited user test of the EIBCT during August through September of 2009 at Fort Bliss. This was the first test in an operationally realistic environment of the components of the EIBCT system. It was a force-on-force test consisting of an infantry company and a scout platoon equipped with all of the EIBCT systems—and I will explain more of what they were individually—executing missions against an opposing threat force.

And then also there is the non-line of sight launch system (NLOS-LS), which consists of rockets with a capability to attack moving and stationary targets, mostly vehicles, up to a range of 40 kilometers. And there was actual live firing under operationally realistic conditions, a test done of that system in January and February of this year.

And so based on the results of those tests, as well as developmental testing that preceded those tests, my assessment is that each of the EIBCT systems requires further development prior to conducting initial operational test and evaluation, which under current schedules would take place in fiscal year 2011.

And all of the systems have notable performance deficiencies, and the demonstrator liability for each of the systems falls below the Army's requirements, and in many instances well below the Army's requirements.

Now, taking the individual systems, the non-line of sight launch system, or NLOS-LS, requires further developmental and operational flight testing to demonstrate improved reliability and the required performance of the precision attack missiles infrared seeker.

During a recently conducted flight test under operationally realistic conditions, two of six missiles fired achieved target hits, and four missed their targets. The reason for one of the failures has been identified fairly definitively. The Army has a pretty good idea of what led to two of the other failures. And then the last failure, the root cause is still under investigation.

But testing has demonstrated NLOS-LS is making progress in some areas. The missile warhead can kill armored vehicles when it hits vulnerable areas. And missiles using what is called the laser designate mode when a laser is shined on a target and the seeker in the missile tries to hit that spot on the target, in that mode there has been demonstrated success where five of seven targets have been hit in both operational and developmental testing.

And in a limited user test that was conducted in 2009—that was before this most recent flight testing—where the operation of NLOS-LS with simulated, it was demonstrated to be interoperable with the Army's fire support network and in those simulated engagements was effective in processing electronic fire commands and in engaging enemy targets. But those were simulations.

As far as the Class I Unmanned Aerial System is concerned—that is the air vehicle with an electro-optical and infra-red sensor that can be used to observe enemy movements—that system meets most of the Army's requirements for air vehicle flight and sensor performance. And it was used extensively during the recently conducted limited user test, the one that was conducted last year.

However, it suffers from poor reliability, and it is also, as General Phillips noted, noisy. It can be heard from a fair number of kilometers away. It also can be spotted from a fair number of kilometers away. That is a double-edged sword. Sometimes that is actually good. In the testing it was observed to actually scare some of the opposing force away. It made them want to take cover, but in general it is a problem.

Because it was unreliable, that UAS, that unmanned aerial system, was not employed as the backpackable company and platoon level asset that was envisioned by the Army, and that is a potential problem, because the UAS lacks the range to be employed regularly in combat as it was in the test.

As far as the small unmanned ground vehicle is concerned, the SUG-V, it demonstrated a capability to remotely investigate potential threats. However, the range over which it can be operated, which is supposed to be on the order of a kilometer, in the test was demonstrated to be much shorter, on the order of 50 to 75 meters when there were a lot of buildings around, and on the order of 100 meters or so in more open terrain.

That is a problem, because it exposes the operators to hostile fire and identification. And in fact, a number of the operators in the limited user test were evaluated as being killed, because they were exposed.

Both the urban unattended ground sensor, the UUGS, and the tactical unattended ground sensor, the TUGS, demonstrated little contribution to unit situational awareness. The images they collected were often blank or blurry and provided little actionable intelligence, and very few of the images were sent forward to higher echelons of command and beyond the platoon and company level.

As far as the network integration kit is concerned, it is composed of computers and in particular the ground mobile radio that is part of the JTRS system. That has demonstrated a capability to receive sensor data and pass messages, and still images over the Army's current battle command network, but it is falling well short of the Army's reliability requirements, and soldiers report that it is very difficult to use.

Also, its ability to pass information securely and reliably within a network composed of many nodes is yet to be demonstrated. And in fact, some of the testing that has been done demonstrates that it has problems forming a 30-node network.

According to the Army's Test and Evaluation Command, the greatest reliability likely to be achieved without substantial rede-

sign for the network integration kit, the two sensors and the small and ground vehicle, as well as the Class I UAS, is below the required reliability for each system. So if the maximum reliability that you can get by fixing without major redesign is below the required reliability, that means, then, an extensive redesign would be needed to achieve the required reliability.

Finally, the Army will execute a second limited user test of all the systems during August through September of this year, and this will be an opportunity to assess the fixes that the Army is now identifying. Some of the changes that are being made to systems that were mentioned by General Phillips, I think, were identified before these tests, the limited user tests were done.

The Army is in the process of doing production qualification and other testing of the systems that presumably will surface additional improvements and changes that have to be made. It is going to be challenging to get all of those changes in so that we can test production representative equipment in this upcoming limited user test.

That is the goal at this point, and then, of course, the initial operational test that is supposed to take place next year. We also want to test production representative equipment with all the changes incorporated.

As far as the JTRS, ground mobile radio or GMR, and the handheld manpacks small form factor or HMS radios are concerned, those programs are working at a complete system development prior to testing in an operational environment scheduled for November of 2010, this year.

But these tests are dependent upon the success of the developmental testing that is ongoing, the development of supporting waveforms, how the radios actually transmit information, and network management tools that is how the radios are formed into a network and how that network is managed, and the completion of other requirements, including radio network architectures that means which units will have the radios and which units will communicate with one another, and then plans for managing the network. So there is a lot of work that needs to be done for those tests to be executed correctly.

The rifleman radio, which is part of the HMS program, conducted a limited user test in April 2009 that highlighted deficiencies in reliability, battery life range, and also what we call an immature concept of operations. The soldiers basically had a hard time figuring out how to use the radios to maximum advantage.

That radio, the rifleman radio, reliability battery life and transmission range were well below user requirements by factors of two to four. There is a new version of that, upgraded version of that radio in development, which is supposed to address many of those problems, but we haven't tested it yet.

The program will conduct a series of tests from April through June of this year to verify correction of deficiencies identified in this limited user test, and the results of these tests will support an acquisition review in August of this year, and the rifleman radio initial operational test in November of 2010.

Manpack radio development testing is being conducted, leading to a limited user test in November of 2010, so that testing for a

number of these radios is supposed to sort of come together late this year. But completion of the planning for that test again awaits user requirements, including network management plans.

The ground mobile radio, or GMR, is experiencing now an eight-month delay in developmental testing due to late delivery of hardware and software. And what that has resulted in is basically a compression of the schedule for doing the testing. So they still want to do the operationally realistic testing on the same schedule. That means there is going to be less time available to test, find problems and fix them leading up to that operationally realistic test.

Execution of that test, that limited user test, depends upon not just fixing problems that are discovered in that now shortened developmental test program, but also delivery of a functional wideband networking waveform (WNW) that is very important. That has to be incorporated in the ground mobile radio in order for it to transmit large amounts of information like, for example, images from the sensors I just described, among other things.

Developmental versions of that WNW, wideband networking waveform, performed poorly in tests that have been conducted and drew concerns from the National Security Agency with regard to security features. GMR—our program is working to integrate a new functional, secure WNW in the GMR prior to a November 2010 limited user test.

The GMR is a critical component of the network integration kit, and if it is delayed, then presumably there could also be an effect, perhaps the delay, on fielding the EIBCT systems.

Now, the overall schedule leading to all of these tests, as I have already alluded to, contains substantial risk, because there is little time to address corrective actions. There is dependence upon yet to be demonstrated waveforms and network management capability, and these requirements need to be finalized.

Mr. SMITH. I am sorry to break in here. It is just that all this prompts a question that I just can't wait to ask. And that is it does not seem like these things are going to be ready anytime soon within the configuration that we would need them to be. I mean, the UAV alone—I mean, if the whole big advantage of the new UAV is that, you know, it has got that hoverability, hoverability doesn't do you much good if everybody can hear it, and, you know, on down the line of all what you put forward.

In your estimation at this point, does it make sense to have any procurement money going in at this point for these programs, all of which, if I am hearing you correctly, are not just a little tweak here, a little tweak there—I mean, they are way off from meeting the capabilities that we are asking them for.

I don't know if you view it as part of your job to make this type of a judgment as to whether or not we should be procuring these things, but I am curious in light of that, you know, explanation of all those deficiencies in all those programs, is it foreseeable that by the end of this year they will have those things fixed to a level that makes sense to buy them? It doesn't seem to me—I mean, a layman's view, but—

Dr. GILMORE. I would really rather demure on saying whether I think it makes sense to try and proceed with production, and the

reason is that I am supposed to be the objective evaluator of the systems.

Mr. SMITH. Okay. Let me ask the question differently.

Dr. GILMORE. But let me say this.

Mr. SMITH. Yes.

Dr. GILMORE. Let me say this, which I think will respond to part of your question.

Mr. SMITH. Okay.

Dr. GILMORE. It will be a challenge, a major challenge, to correct all the deficiencies that we have identified. And the Army acknowledges that. The performance deficiencies that I noted are a concern, but the reliability problems are a particular concern.

Based on the experts that we have consulted, the reliability shortfalls that were demonstrated in this test normally would imply that you would need on the order of perhaps two years to do redesign efforts in order to be ready and meet the reliability requirements that the Army currently says it wants to meet.

Now, later this year and in fact throughout the year, but later this year, I think in the November timeframe, the Army is going to need to review progress in improving reliability of the systems and also review whether all of those requirements actually makes sense, because there is a history of requiring more reliability than is needed. We want systems that are reliable, but sometimes we try to press too far. And we will obviously be involved with the Army in doing that kind of an evaluation, so—

Mr. SMITH. And I get that but, you know, in this instance, and I will inquire further of you and of others, it doesn't seem like, you know, we are looking for a big leap ahead in ability and, gosh, you know, we are only getting about halfway there, but we are still leaping ahead.

I am struggling with a lot of these things to see how they are any better than what we have right now. Now, granted, I am sure there is an answer to that, and I will try to get that. But that, I think, is the big question. Is there progress here at all in terms of the capability over what we are buying now for a lot less money in some instances?

Dr. GILMORE. Well, we have worked with the Army at the direction of Dr. Carter to institute what we call a comparative test now for the initial operational test and evaluation, which will be done next fiscal year. But in that test we are going to have a battalion that is equipped as the units are being deployed now, conducting the same missions and being evaluated in the same way that a battalion equipped with these systems—

Mr. SMITH. And when is that? I am sorry—when is that test?

Dr. GILMORE. That is next year. That is next fiscal year that initial operational test is going to be conducted.

Mr. SMITH. Okay.

Dr. GILMORE. So we will have information at that time on how well the systems are improving the capability of the unit through all what we are buying. And we need a battalion's worth of equipment in order to do that test.

Mr. SMITH. Okay. Sorry to hijack there—please.

Dr. GILMORE. Oh, I do it for you.

Then as far as the ERMP, which is the last system that your letter asked me to assess, the secretary directed a surge in ISR, intelligence, surveillance and reconnaissance support for operations in both Afghanistan and Iraq. And as part of that surge, the ERMP Quick Reaction Capability (QRC), there is one unit that has already been deployed, and there is a second QRC that will be deployed later this year.

And in the ERMP we have something that we developed for all these major systems called a test and evaluation master plan (TEMP), which describes how they should be tested. And that so-called TEMP calls for a series of operational tests conducted in conjunction with the unit training to support that surge.

So what we are doing is incorporating into our test planning training to support the surge. These units, these ERMP units, are being deployed before full operational testing takes place, but we are trying to incorporate the training and other things that need to be done to get the units out there early as part of our testing plan. And so far that has been quite successful.

The initial operational test and evaluation of the full system is scheduled to be conducted in September 2011 with a full rate production decision in April 2012. And as I said, there will be at least two of these quick reaction units that have been deployed prior to that testing.

The Army conducted what they call a customer test in April of last year, and my office provided what we call an early fielding report, which is required under law in that circumstance, to the defense committees in September 2009, assessing the ability of that first Quick Reaction Capability of that unit to accomplish its war-time mission.

And what we found was that—and that testing was conducted in flights over Edwards Air Force Base—what we found was that that unit did effectively employ the ERMP as it existed at that time, although the ERMP, the aircraft, was limited in its capability at that time. It didn't have synthetic aperture radar. It was not able to employ hellfire missiles. It did not have a secure line of sight communications, and it didn't have satellite communications capability at that time.

The development just hadn't proceeded far enough for all those capabilities to be ready, but since that customer test in April 2009, actually all of those systems, all of those additional capabilities have been incorporated in the aircraft, and they are being used in Iraq right now, and they will be available for the next QRC when it deploys later this year.

The Army plans to conduct another limited user test at the National Training Center this time with the Quick Reaction Capability II unit, so that unit will be involved in testing, and at the same time it will be training for its deployment later this year. And as part of that testing and training, it will also be operating with other units with which it will be operating when they all go to the theater later this year.

Full production representative testing will occur in an initial operating test in fiscal year 2011 for ERMP, and then there will be a follow-on operational test in 2012, because there are going to be

additional capabilities, in particular new synthetic aperture radar incorporated in the aircraft that we need to test later on.

And all of those tests will be conducted in conjunction with the unit's deployment to the National Training Center, so there will be testing and training that we will be combining in that series.

And so my assessment of what has happened with ERMP, notwithstanding the fact that we are deploying this capability before we have done full operational testing, the testing that has been done has been robust, and it has been very useful, because it has been combined with the training, and we do need to get these capabilities out as quickly as we can. And I think this is a good example of how we have been able to do that and also test them.

Thank you.

[The prepared statement of Dr. Gilmore can be found in the Appendix on page 82.]

Mr. SMITH. Thank you.

Mr. Sullivan.

STATEMENT OF MICHAEL J. SULLIVAN, DIRECTOR OF ACQUISITION AND SOURCING, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. SULLIVAN. Thank you, Mr. Chairman, Ranking Member Bartlett and other members of the committee.

Before I start, I would just like to introduce Bill Graveline here to my left. He has been the assistant director on the Future Combat Systems program for GAO for longer than probably he wanted to be—probably 8 to 10—well, since 2003. So he has got all of our corporate knowledge, and I am kind of new to it. I have him in case your questions get too tough.

It is my pleasure to be here with you today to discuss the current status of the Army's modernization efforts since the secretary's decision to restructure the Future Combat Systems program back in April.

My testimony will focus on current challenges and opportunities for the Army as it moves forward with its modernization plans, including its current contracting activities, our views on the status of the Brigade Combat Team initial increments, and our views on the ground combat development effort as well.

For the time being, the Army is using the modified Future Combat Systems development contract to continue to increments of development of the Brigade Combat Team equipment and its supporting network. It has also awarded a contract to procure a long lead items for the initial Brigade Combat Team equipment and has issued a modification to that contract recently to begin low rate initial—

Mr. SMITH. If I could ask, Mr. Sullivan, your testimony—

Mr. SULLIVAN. Yes.

Mr. SMITH. Dr. Gilmore did a pretty thorough job of covering a lot of the specific details of that. If you see things that are redundant, if we could please move past that.

Mr. SULLIVAN. Okay.

Mr. SMITH. We want to get to some questions. I think we get kind of the overall gist. If there is something new in addition that you want to add—

Mr. SULLIVAN. Okay. What I would probably do is just summarize our views on how the testing went and where they are today in the acquisition strategy.

In light of the issues that we have discussed here today and the problems that they have had in the task and focusing mostly on the reliability problems that they had, we are concerned at this point that the Army's production decision that was approved by the Department is too risky at this point.

The Army is proceeding with procurement despite having acknowledged that the systems are immature, unreliable and can't perform as required. The decision to move into production with this risk is also at variance with DOD's own acquisition policies, some of the new policies and some of the best practices that emphasize knowledge-based and incremental product development.

As a result, in our soon to be released report, which is out for comment right now and with the committee, I believe—it is still in draft form—but we are intending to recommend that the Army correct all of the maturity and reliability issues with the initial increment that testing has or will identify before the Department approves any additional production lots moving forward and before any of the systems are fielded. So that is kind of where we are on Increment One and follow-on increments.

Our views on the Ground Combat Vehicle development effort are perhaps a little more optimistic at this point. DOD made a material development decision this February, and over the next several months, it will be conducting an analysis of alternatives, which has recently been kicked off.

Once the analysis of alternatives is done, I believe, in early fall this year, it is planning to follow that with a Milestone A decision on whether to award multiple contracts to begin technology development in order to mature technologies prior to going to Milestone B.

In addition, it is currently proposing the use of competitive prototyping with multiple contractors during technology development, which will emphasize mature technologies. And it is planning a preliminary design review to validate contractor readiness to go to systems integration prior to Milestone B in fiscal year 2013.

These are all pretty much plans that go according to a lot of the new policies that have been laid in, a lot of the acquisition reforms that were heard about last year, and tend to follow best practices, although they are still very much in their infancy and can change. Current plans are to deliver the initial vehicle in fiscal year 2017, about seven years from Milestone A to first delivery.

So, Mr. Chairman, as you can see, the current post-Future Combat Systems modernization environment is mixed with what is going on today, and it is still taking form. It is important to note that when we add up all of the funding available in the Future Years Defense Plan (FYDP) today for ongoing development and procurement funding for Brigade Combat Team increments and development funding for the Ground Combat Vehicle, this represents about \$24 billion of investment in the Army's plan budget from 2011 through 2015.

With that amount of money on the line, it is critical to get these things right this time, we think. That is why we will also be recom-

mending that the Army report to the Congress by the end of the fiscal year the details of its new modernization acquisition strategy in full, including plans for program management and contracting strategies.

Mr. Chairman, that completes my statement, and I will be happy to take questions.

[The prepared statement of Mr. Sullivan can be found in the Appendix on page 92.]

Mr. SMITH. Thank you very much.

On the Ground Combat Vehicle, it seems that the Army's—you know, they have issued their request for proposal for it at the same time they are doing an analysis of alternatives, as I understand it. Does that fit with the acquisition policies when you do the analysis of alternatives first and then make the request? How do those two things mesh?

Mr. SULLIVAN. That is a good question, and I think there is probably a nuanced answer to this because, first of all, I think the analysis of alternatives they are doing is not—you know, there are different types, I guess, of analysis of alternatives.

If you are trying to come up with a material solution for a new capability to defeat a new threat or something like that, you might start an AOA much more broadly and consider first whether you need an airplane, a tank or a ship, and then kind of get down to what the material solution would be.

In this case, I think it is pretty clear that they are replacing Ground Combat Vehicle, so they start out, I think, with less broad scope that way. That is less risky, in my opinion.

What we have done is we have looked at it and asked why they would need to be, is there a reason to be concurrently? Is there an urgent need for these, the Ground Combat Vehicle, right now that they have to press it into an acquisition program and start spending a lot of money today? And if there isn't, why not take the time? Do an analysis of alternatives, which should be informing proposals anyway, probably, for new technology.

That would be the question that we have right now. Why? You know, there is no truly urgent need to get this program going now, so why not do the AOA first and then see what you get out of that and see if that can inform contractors' proposals.

Mr. SMITH. Thank you.

And, Dr. Gilmore, back on the EIBCT and then the other component parts, I think, you know, what I am going to need to research more carefully is what exactly is the increase in capabilities, as I said. I mean, it is pretty clear that the program is not where they want it to be and that it is going to take a bit of a pull together there.

Now, that has all kinds of implications in terms of budgetary decisions in the short term, but I am also curious that if we are going to make that type of investment, I think it is going to need to be a little bit clearer, at least to me, why, you know, what is the improvement?

And I would ask you one question about that. So we are going to field a battalion, basically, of the new equipment and tough it out as opposed to a battalion of the old equipment. Can you walk me through—and this is my ignorance to a certain extent—the tim-

ing on that, why that is happening? It is happening next year, as I understand it. In the meantime we are procuring and moving forward with a lot of this equipment and testing it.

I guess I don't understand how that sort of plays out. You would like to have that test performed first before you even buy all this stuff and figure out whether or not it is going to help you. Is this something they have done historically in a lot of other programs? Can you enlighten me a little bit?

Dr. GILMORE. Actually, with regard to conducting initial operational test and evaluation, the low rate initial production units are used to do that.

Mr. SMITH. Okay.

Dr. GILMORE. So typically, we start to produce, but we would like to make sure that we have production—we have to make sure that we have production representative equipment in those so-called, low rate initial production (LRIP), units. Those are what we buy in order to do operational testing.

Mr. SMITH. Okay.

Dr. GILMORE. Now, of course, we oftentimes also buy more of these LRIP units than are actually needed for testing for the reasons.

Mr. SMITH. Right.

Dr. GILMORE. But the short answer to your question is yes, this is what we typically do.

Mr. SMITH. Right. And is there an additional threshold in terms of—because, obviously, you don't want to procure a bunch of stuff that you know isn't going to work, just to run this test. So I imagined there is an initial threshold of, okay, let us get it to this point, and then we procure for the test that we are talking about. Is that the way it plays out?

Dr. GILMORE. Our major concern, I mean, the exact threshold that is associated with approving Milestone C, it has not been my experience there is an exact threshold. There is a lot of judgment involved there—

Mr. SMITH. Okay.

Dr. GILMORE [continuing]. Judgment on the part of the Department's leadership, particularly the Under Secretary for Acquisition. And Dr. Carter in his acquisition decision memorandum (ADM), which I assume you have read, acknowledged clearly all of the problems that I have discussed—

Mr. SMITH. But made the decision to go ahead.

Dr. GILMORE. But as I recall, the ADM said because of the secretary's direction to provide capability to our soldiers in the field as quickly as possible, we will proceed. But he has specified a number of constraints on funding. There are also a number of reviews that he is going to conduct throughout the year, including reviews of the results of this production qualification testing and other testing on the EIBCT systems. There are going to be at least two of those reviews this year to review those results.

So, yes, we do use these LRIP units. It is a matter of judgment as to when a Milestone C is granted, you know, whether it should be granted, given progress in the program. When it is to initial operational test and evaluation, which will be in the fourth quarter of 2011—I think you were pressing me for a little bit more speci-

ficity on when it would be—it is currently scheduled for the fourth quarter of 2011.

We would insist upon fully production representative equipment, and there are other so-called operational test and readiness criteria that are specified in this test and evaluation master plan, capabilities in terms of reliability and performance that the equipment should have demonstrated at that point.

Mr. SMITH. Okay.

Dr. GILMORE. Basically, it needs to be fully production representative.

Mr. SMITH. Makes sense.

Mr. Bartlett.

Mr. BARTLETT. Thank you very much.

Dr. Gilmore, as you know, the Increment One Early Infantry Brigade acquisition decision memorandum signed by Dr. Carter directs DOT&E and the Army to conduct, as part of the initial operational test and evaluation, a comparative test of the EIBCT equipped units with units equipped as currently deployed for operations.

Given the reliability and maturity concerns that have already been discussed, this is obviously going to be a very important test. Can you give us an idea of how the planning is going, if you have any issues or concerns going forward with this comparative test?

Dr. GILMORE. As was directed in the ADM you mentioned, I was asked to work with the Army to develop an initial plan, which I have done, which was also supposed to contain detailed information on the measures of effectiveness and measures of performance that we would use to compare the ability of both of these units equipped with the systems and not, to accomplish wartime missions. And that has all been done.

The planning will continue over the next many months. We have to decide on what kinds of scenarios that we are going to use. I am interested in making sure that we have distressing scenarios, you know, a mission that will be hard to accomplish, that involves surprise, so that we can discern the benefits in situational awareness that the sensors in the EIBCT system are supposed to provide.

They are supposed to provide enhanced situational awareness, and then the NLOS-LS is supposed to provide a somewhat unique capability to hit moving targets, and so we want to make sure that scenarios are constructed to highlight those features as well or show that we haven't achieved an increase in capability in that regard.

So I guess I would say in summary that we have started well. We have detailed measures of effectiveness that we will continue to look at and evolve. And we have embarked on a process to define the scenarios and do the other planning that is necessary, and that is going well.

The one thing I am concerned about, and I am concerned about this with regard to the second limited user test that is, you know, another company level test that is supposed to be done later this year, is that we not repeat the problems that we had in the limited user test that was done this past year, where we had a good test plan, but we did not execute it.

We did not collect as much data as we could. We think that a number of the failures that occurred actually weren't reported, so probably these estimates of reliability that are in my detailed testimony are actually optimistic, even though they are not very good.

We want to make sure that we don't commit those same mistakes again, and we are working hard with the Army, with the Army Test and Evaluation Command, to make sure that we have enough observers and enough gatherers of data and interpreters of data and analyzers of data so that we don't re-create those problems that really caused a lot of lost information in the last test.

And given my conversations with the leadership of the Army Test and Evaluation Command and the interactions my staff is continuing to have with them, I am fairly confident we won't re-create those problems.

Mr. BARTLETT. Thank you.

Mr. Sullivan, this is more of an acquisition policy lessons learned kind of question. I would like for you to compare and contrast two things. Number one, what went wrong in terms of acquisition strategies with the DOD Army decision to begin low rate production for Increment One of BCT modernization with two, what the Army is promising and what we hope transpires as they move ahead with the Ground Combat Vehicle?

Mr. SULLIVAN. Yes, sir. Good question. I think what went wrong with the Increment One is basically if you look at DOD's new policies and the things that have come out of some of the legislation that was passed last year, and if you look at best practices that GAO has looked at a lot from some world-class companies, who developed some pretty complicated products, what you find is the new policy calls for reliability growth curves coming out of the critical design review that is based on production representative prototypes.

Add to it that before you have a Milestone C, typically, you want to have a reliability growth curve established, which is basically mean time between failure rates and things like that that you have plotted on a curve and you have established on that curve a trend towards improvement.

That is what you need to have established in order to reduce the risk enough to go to low rate procurement. And we don't believe they did that. We think that they have not established the trend yet and so that the decision to begin low rate production and commit procurement dollars to that Increment One is too early and too risky. That is what we mean when we say it is at variance with the new policies and with best practices.

But what we see in Ground Combat Vehicle is a program, a plan that has been laid out that really pretty much you can see that they have taken the reform legislation, the changes to the acquisition policies that have been put into the 5000 Series, and looked at a lot of the best practices and are trying to do things much more incrementally, much more knowledge-based.

They have a plan now to go with only mature technologies. They are going to do a lot of competition early. There are a lot of systems engineering funding upfront in order to get requirements right. You know, the one thing we would question why they are doing—they have let proposals out before they are done with an AOA, but

we still think the AOA will be done in time to inform the technology development part of this.

And so the program as is laid out now reduces risks at the proper time. It is trying to—it has got plans in there to balance requirements, to take care of the trade space before they made that Milestone B decision, which is where really the big money starts getting spent on an acquisition program.

The Increment One for the Brigade Combat Teams has rushed—they have kind of rushed through that low rate procurement decision.

Mr. BARTLETT. Thank you.

Dr. GILMORE. If I could, I would like to make one comment on reliability growth planning with regard to the EIBCT. The test and evaluation master plan for EIBCT has recently been revised. It is setting in my office. It now incorporates detailed reliability growth planning and reliability growth curves in testing. So I think that is relevant to the discussion.

Mr. SMITH. And just so I follow up a little bit and be educated along the way here—I know some of it; I have seen some of it, but keeping track of all of it is complicated, but very important—as I understand it, we already in 2010 we have procured the money for the test battalion, basically.

And they haven't spent that yet for the very simple reason that they don't have a product worth buying yet. So they have still got that money. And then what they are asking us to do and what has been put into this budget is actually to procure—and correct if I am wrong—three out of the nine brigades long-term with that equipment, which just initially, you know, it seems like a pretty big pull.

So that is going beyond the test step, before any of this testing is done, and that even if you were willing to take that risk with this program, because you do have to take some risks. I do recognize that. We want to get this stuff in the field so that, you know, our troops have what they need. And you can't, you know, wait for everything to be perfect before you do that. I understand that balance.

But within the acquisition area, this sort of advance procurement before testing is approved, again as I understand it, it is supposed to be somewhere in the 10 percent of what you are buying range. Three out of nine rather comfortably above 10 percent—doesn't that violate the acquisition reform approach that we have done? And what do your—first of all, does it? And second of all, what would be the justification for doing that?

Did you want to—

Dr. GILMORE. As I am reading the ADM here, it says that Dr. Carter approved low rate initial production for one Brigade Combat Team and long lead of no more than \$70 million, which is a down payment for the second Brigade Combat Team.

Mr. SMITH. Okay.

Dr. GILMORE. And anything in addition to that is going to be dependent upon the results of the testing and everything else that is done this year and the outcome of these two in progress reviews that are going to be conducted. That is my understanding.

Mr. SMITH. That is two instead of three.

Dr. GILMORE. Yes, well, it is sort of one-plus instead of three. It is one—he approved the procurement for one EIBCT and long lead, but not for funding for the second. So, yes, we have started, but we haven't committed to all three.

And then procurement of the non-line of sight launch system was limited to \$35 million, depending on completion of flight testing, and that flight testing was just completed last month. And that will be the subject of some of these reviews that take place over the next few months.

So I add that information to you.

Mr. SMITH. Okay.

Dr. GILMORE. That is my understanding of what is going on. And I think I have already commented upon, as much as I can——

Mr. SMITH. Absolutely.

Dr. GILMORE [continuing]. On the rationale for the Milestone C decision to proceed with low rate initial procurement.

Mr. SMITH. Gotcha.

Mr. Sullivan.

Mr. SULLIVAN. Yes, I wouldn't dispute that Dr. Carter looked at this very carefully and understands the risks and has put some decision-making in there to try to mitigate those risks.

But I guess what we see is when you have—if I could just for a minute, in 2003 that—in 2003 when Future Combat Systems started as another transaction, by the way, that was right after the Department did their last policy revisions for acquisition policy and tried to put more risk mitigation into those policies.

This is just so reminiscent of that. You know, you have policies for a reason. So there is momentum. I guess my point is that they are past Milestone C now.

I believe—don't quote me on this, but I think somewhere around \$400 million of procurement money is in the fiscal year 2010 budget, and another 600-and-some, so by next year, if that budget holds, they will have \$1 billion of procurement money invested in Increment One, and they don't know the reliability at all at this point. So it is a variance threat.

Mr. SMITH. No, that certainly seems to me to be at least worthy of a raised eyebrow and further inquiry.

Mr. SULLIVAN. And I think that is kind of where we are now as with the raised eyebrow, you know. It is just beginning, and we want to stay in there. The recommendations we are making, we don't believe they are draconian in any way and probably are reasonable. So we have to keep an eye on them.

Mr. SMITH. I think that is all we have got.

Oh, sorry. Mr. Bartlett.

Mr. BARTLETT. I would like to join the chairman in his concern about rush to procurement, when the equipment that we are now using is not demonstratively deficient. I think of the MRAPs program, and clearly, there was a clear and urgent need for MRAPs, and we pulled out all the stops and made that procurement in record time.

But where there is no driving need like that, I am having some trouble, along with the chairman, understanding why we rush so much with such huge expenditures of money. If what we have got

is pretty good, why can't we do it very deliberately with much less expenditure of money and much less risk?

Mr. SULLIVAN. I just think that is an excellent point. In MRAP, you know, they made the trades early, told the warfighter what they were going to get before they started, and then delivered that. And here, the requirements may go down on this before it is all done, and that should have happened in Milestone B——

Mr. BARTLETT. Right.

Mr. SULLIVAN [continuing]. Or before Milestone C, anyway.

Mr. SMITH. And I will just conclude by saying that is something we are going to be taking a very, very close look at, you know, is the requirements.

And throughout this whole discussion, I am reminded of something that my predecessor, Mr. Abercrombie, said about the Future Combat Systems, which was, you know, it seems like the Army, you know, was tired of the Navy and the Air Force having all these big-ticket items going way crazy over budget and getting all the money. And, you know, they are the Army, so they get just a little piece here, a little there, so they had to come up with their own massive program so they could get a piece of that as well. He, obviously, was being facetious.

And I do understand clearly the need, you know, to update our brigades as we go forward. But I think we have to go from just sort of that general understanding that with technology, with improvements and innovation, we want to try to get, you know, the best equipment out there as often as we can with a clear understanding of what that improvement is, not just the general notion that, you know, the next thing we build is always going to be better than the last thing we built, so we had better start building something new, which I realize is not what they have done.

But they have got to come up with much more specificity as to why this is getting better and how it is going to get better, if we are going to proceed on this. And we will continue to work on that in the weeks and months ahead before we do our bill out of committee.

And then I imagine we will continue to work on this throughout the legislative process as, you know, any of these problems will have some ongoing testing. There will be certainly further analysis, and we will want to see that on a regular updated basis and make adjustments accordingly in what is in our authorization bill.

So I thank you gentlemen for your work—very technical, very difficult, and very, very important to do our best to get it as right as we possibly can. And we certainly could not do that without both of you and our previous panel as well. So thank you very much for your testimony.

And with that, we are adjourned.

[Whereupon, at 4:26 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 10, 2010

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 10, 2010

Air and Land Forces Subcommittee
Opening Statement of Chairman Adam Smith
Army Acquisition and Modernization Programs

March 10, 2010

“The subcommittee meets today to receive testimony on the Army’s acquisition and modernization budget request for fiscal year 2011. The Army’s FY 2011 base budget includes \$10.3 billion in Research, Development, Test and Evaluation, and \$21.3 billion in procurement. The Army is requesting an additional \$151 million for research and development and \$8.9 billion in procurement in the ‘Overseas Contingency Operations’ request.

“Overall, this total request for more than \$40 billion appears to be a solid request that will provide the Army with what it needs for today’s wars and investments in future capabilities. With regard to specific programs, this hearing will highlight several new initiatives and changes to ongoing programs.

“First, the subcommittee expects to hear an update on the Army’s new Ground Combat Vehicle (GCV) program. This program, begun in the wake of the termination of the FCS manned vehicles, seeks to field a new infantry carrier vehicle by 2017.

“While I hope that the Army uses some of the technology developed for the FCS Manned Ground Vehicles (MGV), it is imperative that the Army not go down the same path in terms of a development and acquisition strategy.

“Specifically, a key failing of the FCS MGV program was its poorly thought through set of requirements – such as the need to put one on a C-130 aircraft – which pushed the limits of technical feasibility, and which led to a design eventually deemed not appropriate by Secretary Gates for today’s combat environment.

“Another key failing of the FCS MGV program was its schedule-driven nature, which emphasized ramping up production over a solid test program that would inform the design before Congress was asked to commit many billions in procurement funding.

“For GCV, it is my hope that the Army takes a lower-risk, more measured approach to developing the vehicle, with some flexibility in requirements as the program moves along.

“Finally, the Army must also pay attention to cost and be realistic about what it can afford. The GCV is set to field in 2017, a time at which we hope that the Army is out of Iraq and Afghanistan. As a result, Army resources may not be as plentiful then as they are today.

“The FCS MGVs were expected to cost almost \$20 million each. I hope that the Army is not headed toward a similar cost figure for the initial GCV vehicles. Such a high per-vehicle cost may not allow the Army to procure a sufficient number of GCVs, when the time comes.

“With regard to what is left of the Army’s FCS program, now dubbed the ‘Early Infantry Brigade Combat Team’ program, I was disappointed in the most recent test results, which showed some potential for the equipment, but also pointed out very poor reliability rates and the need for complete redesigns of some system elements.

“Based on these concerns, in last year’s defense authorization act, Congress prohibited the Army from moving forward with more than one Early Infantry Brigade Combat Team (EIBCT) brigade set of equipment, with exceptions for urgent theater needs.

“I remain concerned that the Army is moving too quickly into procurement of EIBCT equipment before it is fully tested and performing at a level that justifies its high cost, given some of the current alternatives the Army has in the field today. I also remain concerned that while the FCS program has been officially terminated, its base contract with the Lead System Integrators lives on.

“As a result of this contract, the Army appears destined to be committed to using an LSI for the EIBCT program through 2014 – more than five years after the base FCS program was terminated by the Department.

“With regard to the Stryker vehicle program, I am aware that the Army is considering a new ‘Double V’ hull upgrade for some Strykers, in order to improve their protection against Improvised Explosive Devices. I look forward to hearing an update on the status of that plan today.

“This year’s request also includes a substantial investment in Army aviation, both in new aircraft, new aviation brigades, and additional training funds. While clearly an appropriate investment to support today’s combat operations, I hope to hear more about what the long-term costs could be to the Army of maintaining more aviation units.

“Another issue facing the Army this year is the future of the M4 Carbine. The Army has fielded hundreds of thousands of these weapons in recent years, and is now looking at both an upgrade program and a potentially new weapon development effort as well. Today I hope to hear about the need for this ‘dual track’ approach, and how the Army plans to proceed.

“Finally, today’s hearing also covers areas that don’t get that much attention in the media, but which represent very large annual investments by the Army: communications equipment and trucks.

“This is a critical year for the Joint Tactical Radio System, which recently transitioned to the Army for program management. The success or failure of elements of this program will have long-lasting implications for Army communications and networking equipment.

“In the area of trucks, the Army continues to spend billions a year on a wide range of vehicles. Of note this year is the shift of production for Army Medium trucks from BAE to Oshkosh.

“In addition, the Army’s future plans for humvee production appear to have changed significantly, with funding for new US Army humvees being zeroed out in the FY2011 budget submission.

“Overall, regardless of the rise and fall of particular programs, the Air and Land Forces subcommittee will continue to support the Army’s needs in a bipartisan manner.”

RECORD VERSION

STATEMENT BY

LIEUTENANT GENERAL ROBERT P. LENNOX
DEPUTY CHIEF OF STAFF OF THE ARMY, G-8

AND

LIEUTENANT GENERAL WILLIAM N. PHILLIPS
PRINCIPAL MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY
FOR ACQUISITION, LOGISTICS AND TECHNOLOGY AND
DIRECTOR, ACQUISITION CAREER MANAGEMENT

AND

DR. DAVID M MARKOWITZ
DIRECTOR, CAPABILITIES INTEGRATION, PRIORITIZATION AND ANALYSIS
HQDA ODCS G-3/5/7

BEFORE THE

SUBCOMMITTEE ON AIR AND LAND FORCES
COMMITTEE ON ARMED SERVICES
UNITED STATES HOUSE OF REPRESENTATIVES

ON ARMY ACQUISITION AND MODERNIZATION PROGRAMS

SECOND SESSION, 111TH CONGRESS

MARCH 10, 2010

NOT FOR PUBLICATION
UNTIL RELEASED
BY THE COMMITTEE
ON ARMED SERVICES

Introduction

Chairman Smith, Congressman Bartlett, and distinguished Members of the Subcommittee on Air and Land Forces, we thank you for this opportunity to discuss Army Acquisition and Modernization Programs in the Fiscal Year 2011 (FY11) budget request. We are pleased to represent Army leadership, members of the Army acquisition workforce, and the more than one million courageous men and women in uniform who have deployed to combat over the last eight years and who have relied on us to provide them with world-class weapon systems and equipment for mission success. We thank Members of this Committee for your steadfast support and shared commitment to this goal.

We will open today's statement by providing an overview of the Army modernization strategy, using current program initiatives to illustrate our plan. We will then elaborate on specific systems on which you have asked us to focus, and our testimony will conclude with a discussion of the requirements process.

Why the Army Needs to Modernize

The 2010 Army Modernization Strategy is consistent with DoD's High Priority Performance Goals in the President's FY11 Budget's Analytic Perspectives volume, and follows the guidance of the Secretary of the Army and Chief of Staff, who have provided us with imperatives and goals to address the two major challenges facing the Army:

Restoring Balance to our Force and ***Setting Conditions for the Future***.

Two of the imperatives for restoring balance confer upon us the obligation to modernize our equipment base to ensure victory on today's and tomorrow's battlefields.

- ***Preparing our Soldiers for success in the current conflict*** directs us to identify rapidly and fill those capability gaps identified as critical to the warfighters currently engaged in operations. In this sense, modernization is mandated in support of winning the current fight and directing new capabilities be brought to

the current battlefield to close specific capability gaps. Examples of modernization in this sense include:

- o Increasing the quantity and capabilities of our aviation fleet in response to the increasing reliance on those assets in Iraq and Afghanistan. In FY11, we plan to begin the investment that will lead to the stand up of the 13th Combat Aviation Brigade (CAB). And;
 - o Accelerating Intelligence, Surveillance and Reconnaissance (ISR) programs due to the significant contributions they are making to counterinsurgency fights. We intend to accelerate the Extended-Range Multi-Purpose Unmanned Aerial Vehicle (UAV) to capitalize on the power of combining full motion video and signals intelligence, as well as manned-unmanned teaming.
- ***Transforming to meet the demands of the 21st Century*** requires us to resist focusing completely on the type of warfare we face today – counterinsurgency – and hedge against other potential types of missions awaiting our Soldiers in the future. In this sense, modernization is critical in preparing our Army for ***any mission*** we might be called upon to do, investing in and developing the required capabilities, and fielding these capabilities to our Soldiers through a comprehensive, feasible, and affordable plan. Some examples of modernization in this regard include:
 - o The development of the Army Integrated Air and Missile Defense system. This program will enhance the capability of our ground-based Air and Missile Defense units. Enabling us to conduct beyond line-of-sight engagements, allowing us to protect a greater number of defended assets, changing our employment techniques/doctrine by enabling point versus area defense, while improving capability against a wide range of threats. And this will be developed as an integral part of the Joint air and missile defense architecture. And;

- o The upgrade of the Army's self-propelled artillery fleet, the Paladin, through the Paladin Integrated Management program. This program will increase the capability of the system by incorporating an automated loading system and will decrease the sustainment burden by replacing the chassis with a Bradley model, which is in common with many of the other combat vehicles in the Heavy Brigade Combat Team (HBCT) formation.

In parallel with these ***Restoring Balance*** imperatives, ***Setting Conditions for the Future*** provides reinforcing guidance in answering the two fundamental questions of why and how the Army needs to modernize.

Setting Conditions for the Future requires all elements of the Army to be synchronized – organizing, manning, training, and equipping. However, there are some specific elements of that goal that influences Army Modernization. Specifically, we want an Army that is, "...a versatile mix...of networked organizations...equipped and ready [for] full spectrum operations to hedge against unexpected contingencies."

To achieve this goal, our Modernization strategy **must** provide a balanced set of capabilities, ensuring that the most important capability gaps are closed as fast as possible, so an adversary cannot circumvent our relative strengths to exploit a relative weakness.

How the Army will Modernize

The Army will accomplish our modernization goals by focusing on three major lines of effort:

The **first** major line of effort is developing and fielding new capabilities to meet identified capability gaps through traditional and rapid acquisition processes. To maintain our advantage over current, emerging, and future threats, the Army must provide our Soldiers with the equipment they need. The Army must accurately identify capability gaps and consequently develop viable solutions for the Soldier and incrementally field enduring capabilities across the force.

The primary element of this line of effort is the implementation of the Brigade Combat Team (BCT) Modernization Plan, which was approved by the Secretary of Defense in November of 2009. This plan enables incremental improvements to the network, integrates Mine Resistant Ambush Protected Vehicles (MRAPs) into formations, incrementally fields capability packages to the Infantry Brigade Combat Team, and develops a new manned Ground Combat Vehicle (GCV). We will discuss this plan in greater detail later in this statement.

Other elements of this first line of effort include leveraging breakthroughs from the Army's Science and Technology Program and shortening the time between identification of a requirement and delivery of the solution, by optimizing and supporting the Capabilities Development Rapid Transition (CDRT) process.

The **second** major line of effort in the Army's Modernization Strategy is the continuous modernization of equipment to meet current and future capability needs through upgrade, replacement, recapitalization, refurbishment, and technology insertions. This effort focuses on how we intend to keep Army equipment relevant and capable for the foreseeable future.

The most important element of this line of effort is the development and continuous refinement of a comprehensive investment strategy that integrates affordable portfolio strategies for selected fleets of equipment. These portfolios include Fighting Vehicles; Aircraft; Tactical Wheeled Vehicles (TWV); Battle Command (BC) and Networks; and ISR. Integrated Portfolio Strategies will provide a long-term plan for the management of fleets and resources to achieve Army goals and objectives over time.

Important elements of this second line of effort also include developing processes to make fleet sustainment decisions routinely based on cost benefit analysis and capitalizing on technology base initiatives.

The **third** major line of effort in our Modernization Strategy is meeting the needs of our force through Army priorities and Army Force Generation, or ARFORGEN, the

Army's rotational readiness model. This effort allows us to determine the objective levels of modernization within our fleets of equipment, revealing the optimal amount of modernization needed, when it will be needed and by whom.

Supporting elements to this line of effort also include updating the 2009 Army Equipping Strategy, incorporating lessons learned from combat, including, inputs from the field, and taking into account the change to the strategic and fiscal landscapes. Finally, establishing Theater Provided Equipment in Afghanistan will allow us to provide the forces deployed there with the best available equipment, while at the same time reducing the cost and risk involved in the repetitive transportation of unit equipment to and from Afghanistan.

The Cornerstone of Army Modernization – The Brigade Combat Team Modernization Strategy

In April 2009, Secretary of Defense Robert M. Gates provided guidance and directed the Army to “accelerate the initial increment of the program to spin out technology enhancements to all combat brigades” and noted the lack of a clear role for MRAP in the current vehicle programs. The Army was further directed to “cancel the vehicle component of the current Future Combat System (FCS) program, reevaluate the requirements, technology, and approach – and then re-launch the Army’s vehicle modernization program....” The Army saw this as an opportunity and has shaped the Army’s new approach to BCT Modernization.

Following the Secretary of Defense’s April 2009 decisions, the Army directed the U.S. Army Training and Doctrine Command (TRADOC) to develop recommendations to modernize our BCTs incrementally and to determine the operational requirements for a new GCV. In response, TRADOC established Task Force 120 (TF 120) which evaluated the Army’s short- and long-term modernization requirements to ensure proposed solutions mitigated the Army’s highest risk capability gaps. TF 120 delivered its recommendations to senior Army leaders in early September 2009, which focused on capability packages, GCV operational requirements, and BCT network integrated

architecture. These recommendations form the basis for the incremental modernization of all the Army's BCTs.

Subsequently, in November 2009, the Secretary of Defense approved the Army's BCT Modernization Plan which:

- Enables incremental improvements to the Army BC Network;
- Incorporates MRAP vehicles into the force;
- Accelerates the fielding of Capability Packages to all BCTs by 2025;
- Develops a new manned GCV within seven years.

Battle Command Network Improvements

The Army BC Network will improve our situational awareness and collaborative planning capabilities by sharing essential information from an integrated platform or a disconnected Soldier to their Command Post. Network modernization utilizes two primary transport programs which will incrementally move the Army to a single and expanding Army BC Network: Warfighter Information Network-Tactical (WIN-T) and Joint Tactical Radio System (JTRS). WIN-T is the backbone for the Army's transport modernization strategy and will be fielded in three increments. Increment one provides reach-back capabilities to Battalion Command Posts and fielding is almost completed. Increment two provides an initial on-the-move transport capability including real-time high definition imagery to BCT and Battalion Commanders and Beyond Line-of-Sight services to the BCT Company level and is scheduled for initial fielding in FY12. Increment three expands on-the-move capabilities and adds an aerial tier vastly improving network reach, redundancy, and management.

Incorporating Mine Resistant Ambush Protected Vehicles

The success of the MRAP family of vehicles in Iraq and Afghanistan demonstrates the critical need for integration of these types of capabilities in all of the Army formations and as a part of the overall manned ground vehicle strategy for the future. The Army will establish 20 sets of MRAPs tailored to BCTs and available for their employment while in the available phase of the ARFORGEN cycle, and ensure MRAPs are available for home station training and in the institutional training base. In select enabler units (sustainment brigades, medical, route clearance, and explosive ordnance units) MRAPs will take the place of some organic vehicles. The Army will also maintain MRAPs, including the newest variant the MRAP – All Terrain Vehicle (M-ATV), in operational float and war reserve stocks.

Accelerating the Fielding of Capability Packages to All BCTs

Capability Packages are specifically designed to fill gaps and mitigate risk, align with the Program Objective Memorandum, and deliver new capabilities in two-year increments in support of ARFORGEN. The Capability Package concept recommends BCT modernization priorities, addresses current and expected BCT high-risk capability gaps, and is fielded and funded over specific two-year timeframes as complete packages or sub-packages based on Soldier needs, technological advances, and available resources. The Army's BCT Modernization plan accelerates the fielding of Capability Packages to 29 BCTs through FY16 and to all BCTs by FY25.

The capabilities scheduled for delivery to the first BCT in FY11-12 are in the final test and evaluation phases, and while they have been more than satisfactory, they have identified several shortfalls and some reliability issues. We are cognizant of the risks going forward, but also aware of the importance of fielding integrated networked systems to the current warfighter. The program managers along with industry partners are working to correct these issues and integrate fixes for the second round of testing in 2010 and the final round of testing, called the Initial Operational Test and Evaluation, in

2011. The Army, along with OSD, will closely monitor progress toward correcting these problems and continue to assess the program at reviews later this year in April and in December to ensure these systems meet warfighter needs.

These capabilities will provide commanders with improved precision fires capabilities found in the Non Line-of-Sight Launch System (NLOS-LS), increased ISR capability in the Class I UAV, Unmanned Ground Sensors, and Small Unmanned Ground Vehicles, and integrated network capabilities that link the Soldier to headquarters in Network Integration Kits.

Future Capability Packages will address identified capability gaps across the force, leveraging mature technologies and resources to the Soldier. TRADOC's Capability Package development process, beginning with the annual capability needs analysis, ensures the timely identification, analysis, selection, and prioritization of viable solutions for inclusion in incremental capability packages. Future Capability Packages may include upgrades to capabilities scheduled for fielding in FY13 and FY14, such as a common controller for all unmanned vehicles, both air and ground, as well as a new variant of an unmanned ground vehicle, which will provide additional force protection capabilities. A continuous review of capability needs and an incremental delivery approach of solutions will ensure our units and Soldiers are equipped with the most advanced technologies our Nation's resources can provide to meet current operational requirements.

Developing a New Manned GCV

To inform the GCV operational requirements development effort, the Army sponsored a GCV Blue Ribbon Panel which received input from Joint-Service partners, retired general officers, think tank analysts, representatives from the Office of the Secretary of Defense, Army Soldiers, and leaders with a wide range of operational experience. Additional input from commanders and Soldiers with recent combat

experience in Iraq and Afghanistan was critical in identifying characteristics and features needed in the new GCV.

The new platform will provide a versatile range of capabilities, including the under-belly protection offered by MRAP, the off-road mobility and side protection of the Bradley Fighting Vehicle, and the urban and operational mobility of the Stryker. It will include precision lethality to enable decisive results while maintaining overmatch against like systems, and integrate the network to maintain situational awareness in urban and other operations. While the new vehicle will provide sufficient space and electrical power to accept the network, it will also have growth potential to ensure the ability to integrate upgrades and new technologies. The GCV's development approach enables production of the first vehicle by FY17, while establishing a basis from which to adapt. Capabilities incorporated in subsequent increments will be based on changes in the operational environment and enabled by maturation of emerging technologies.

Program Updates

As requested by the committee, we are providing specific updates on several programs. Each of these programs contribute to the intent of Army Modernization – to develop and field an affordable mix of the best equipment available to allow Soldiers and units to succeed in both today's and tomorrow's full spectrum military operations. Materiel modernization provides new and improved capabilities to Soldiers that enable them to accomplish their missions and maintain overmatch against the enemy.

With regard to existing vehicle upgrades, the Army's combat platform modernization program is focused on standardizing 31 HBCT sets with two variants of the **Abrams** tank and **Bradley Infantry Fighting Vehicle**, two of the Army's highest priority combat vehicle recapitalization programs. This modernization will provide 26 operational HBCT equivalents and five strategic HBCT equivalents. At present, the Army has nearly completed fielding modularized HBCTs, which gives every brigade a

common structure. The short-term modernization goal is to populate these brigades with only two variants of the Abrams and the Bradley – the Abrams M1A2SEP v2 is being paired with its partner the Bradley M2A3 and the Abrams M1A1AIM SA is being teamed with the Bradley M2A2ODS SA. The modular HBCT force structure will be equipped with the two variant Abrams and Bradley fleet by the end of 2013. This modernization plan aligns compatible combat platforms with common modular formations.

Stryker has planned procurement of 3,953 vehicles with 3,149 having been accepted to date. These vehicles support eight Stryker Brigade Combat Teams, with the eighth SBCT begin fielded in FY11 at Ft. Bliss, Texas; a Stryker Theater Provided Equipment set supporting the Afghanistan theater; a strategic pool of ready-to-fight systems; Institutional Training Base; Test Articles; a Depot Repair Cycle Float Pool managed by the U.S. Army Materiel Command; and other operational requirements. The Stryker program received a Full Rate Production decision on eight of 10 configuration variants, including the Infantry Carrier Vehicle, Reconnaissance Vehicle, Commander Vehicle, Mortar Carrier Vehicle, Fire Support Vehicle, Anti-tank Guided Missile Vehicle, Engineer Squad Vehicle, and Medical Evacuation Vehicle. The remaining variants – the Nuclear, Biological and Chemical Reconnaissance Vehicle and the Mobile Gun System – are in Limited Rate Production.

The **Paladin Integrated Management** (PIM) program is the Army's fire support modernization effort for the M109A6 Howitzer (Paladin) and the Field Artillery Ammunition Supply Vehicle (FAASV) platforms that support our HBCTs. The Paladin PIM addresses obsolescence and sustainment through the integration of Bradley components and Non-Line of Sight-Cannon (NLOS-C) technologies resulting in an upgraded firing platform. Commonality of key components, including the engine, transmission, final drives, and suspension will reduce Operations and Support costs as well as the logistics footprint of the HBCT.

The **Increment 1 Early-Infantry Brigade Combat Team (E-IBCT)** completed the FY09 Limited User Test (LUT) in September, 2009. The Increment 1 E-IBCT completed a successful Milestone C Low Rate Initial Production (LRIP) decision at the December 2009 Defense Acquisition Board (DAB). The Defense Acquisition Executive approved the initial LRIP procurement of one BCT set of Increment 1 systems. Follow-on DAB In-Progress Reviews are planned for March and December 2010 to assess continued development progress, supporting the procurement of 2nd and 3rd BCT sets. Additional technical and operational testing is planned for 2010 to support the December 2010 DAB decision. Technical Testing begins in April 2010 and culminates in a September 2010 LUT. The Army awarded the LRIP contract for the initial Brigade on February 24, 2010. Increment 1 systems included in the LRIP contract are: The Network Integration Kit, Class I Unmanned Aerial System, Small Unmanned Ground Vehicle, Urban-Unattended Ground Sensors, and Tactical-Unattended Ground Sensors. The NLOS-LS completed the flight LUT in February 2010. The results of this LUT are expected in April 2010. The NLOS-LS will request a Path Forward decision at the DAB In-Progress Review in March 2010.

The GCV, the **Ground Combat Vehicle**, is the Army's next-generation Infantry Fighting Vehicle, combining lessons learned from the survivability of the MRAP vehicle, the tactical mobility of the Bradley Fighting Vehicle, and the operational mobility of the Stryker. The Army released a Request for Proposals (RFP) on February 25, 2010, for the Technology Development phase of the GCV effort. The first combat vehicle designed from the ground up to operate in an Improvised Explosive Device (IED) environment, the GCV will have enhanced mobility that will allow it to operate effectively in both urban and off-road environments. It will be designed to host the Army's network. And, it will have the capacity available to accept future upgrades incrementally as technologies mature and threats change. Because of the pace of change and the operational environment, the Army is pursuing a GCV program timeline that provides the first production vehicles in seven years.

Modernization of the Army's TWVs, or **Tactical Wheeled Vehicles**, continues to be a critical step in providing the Soldier with the best possible protection, payload, and performance in each vehicle of the fleet. The overarching goal of our tactical wheeled vehicle strategy is to balance (planning, analyzing, coordinating, and executing) the quantity, quality, and sustainment of Army equipment throughout its life cycle to meet combat, training, generating force, and homeland defense requirements with the appropriate capabilities. Finding the right balance and mix of TWVs requires the Army to assess and adjust investments continually. We will continue to use a combination of new procurement, recapitalization, and reset to achieve our strategic objective by addressing the readiness issues associated with shortages, proper mix, and age/usage in a cost effective manner. The Army will continue to take maximum advantage of existing platforms, making necessary improvements in both capability and reliability. All new vehicles will have scalable armor in form of A-B Kits executed in accordance with our Long Term Protection Strategy.

At the heart of our modernization plans is the **Joint Light Tactical Vehicle** (JLTV). A Joint program with the Marine Corps, JLTV is a family of vehicles with companion trailers capable of performing multiple mission roles that will replace the **High Mobility Multipurpose Wheeled Vehicle** starting in 2015. We will continue to procure and field the **Family of Medium Tactical Vehicles** to replace vehicles in the medium fleet that are over 30 years old. Recapitalization of our **Family of Heavy Tactical Vehicles** fleet will focus on variants of the aging Heavy Expanded Mobility Tactical Truck as well as the incorporation of MRAPs vehicles into our future force, as they are released from theater. As part of this effort, this investment strategy will also recognize the fiscal and operational realities inherent to the current operational environment. To do this the Army will find ways to manage its TWV fleet readiness in ways that are both creative as well as efficient. Additionally, the Army will move away from the pure-fleet unit-set-fielding prerogatives of the 1990s and consider more appropriate and efficient ARFORGEN-based operational models.

The Army is committed to improving our **small arms** capabilities continuously. The Army is well into the fielding of a new semi-automatic sniper rifle, the M110; a new 40mm grenade launcher to replace the Vietnam era M203; and we are developing a lighter .50 cal machine gun and will replace our old M2 .50 cal barrels with quick change barrels that do away with head space and timing issues that have been a training and safety issue for years. The lightweight medium machinegun, the M240L, will begin fielding later this year to our light forces.

The Army has fielded over 400,000 **M4 carbines**, replacing M16s in all the Combat Brigades and Division headquarters. The smaller, more maneuverable weapon has been the overwhelming individual weapon of choice for our Soldiers in combat. Regardless of the successes we have seen in our small arms, we continue to pursue improvements in our individual weapons' capability. We are currently taking a dual approach to improve the current weapon, the M4, as we move forward with a new carbine requirement. The Project Manager (PM) released a market survey in January 2010, seeking the best industry has to offer for improvements to the current M4. The PM expects to release an RFP soon to compete the upgrade program. Additionally, the Army will conduct a full and open competition to address a new requirement for an individual carbine. Once the Joint Requirements Oversight Council approves the new requirement, the PM will initiate the competition with the release of an RFP for comments from industry. This is the first step in conducting the competition. The Army is working with the other Services in these programs to ensure their requirements are included in our process and they are always invited to participate in the programs' development and production.

The Army is working to deliver the best ammunition possible to our Soldiers while, at the same time, fostering environmental stewardship. The **M855A1** cartridge, designed for use with the M16/M4 family of weapons and the M249 Squad Automatic Weapon, meets both of these goals while providing consistent, shot to shot performance against all targets. This "green" program resolves the environmental

issues associated with leaded ammunition and directly addresses the field reports associated with occasional poor close quarters battle performance. Testing to date has verified that the M855A1 performs significantly better than the M855 or any other 5.56mm cartridge available for military use. The LRIP began in January 2010 for production qualification test and live fire test and evaluation through April 2010. By the end of the production qualification test, there will be more than one million live-fire shots, making it the most tested round ever to be used by Soldiers. The M855A1 will be available for fielding in June 2010.

The **Joint Tactical Radio System (JTRS)** is a Department of Defense (DoD) initiative to develop a family of software-programmable tactical radios that provide mobile, interoperable, and networked voice, data, and video communications at the tactical edge of the battlefield. JTRS development is 85 percent complete. For the Army, JTRS will provide a tactical radio communications network for Infantry, Heavy, and Stryker Brigade Combat Teams by providing the tactical networking transport capability through scalable and modular networked communications. It will also provide the current force a mobile, ad hoc networking capability using new advanced waveforms – Soldier Radio Waveform and Wideband Networking Waveform. The majority of the radios in the **Ground Mobile Radio (GMR)** Program and the **Handheld, Man-pack and Small Form Fit (HMS)** Program will be procured for the Army.

The GMR will provide the Army a multi-channel (up to four channels) operation, allowing full functionality of each legacy radio it replaces. In addition, GMR will include an integrated global positioning system (GPS) capability based on the Selective Availability Anti-Spoofing Module-based GPS receiver with a Precise Time and Time Interval output. Today, GMR is manufacturing production representative systems which will participate in E-IBCT LUT. The GMR will enter LRIP in the 2nd quarter of FY11.

The HMS will provide a scalable and modular Software Communications Architecture compliant networked radio frequency communication capability to meet

Army Handheld, Man-pack (Mounted & Dismounted) and Embedded Radio requirements. The program will deliver a Handheld (2 Channel) radio, a Man-pack (2 Channel) radio, and various Small Form Fit radios for various ground sensors/unattended vehicles/unmanned air vehicles. The HMS will enter LRIP this year and begin delivering to our Soldiers in FY11.

With regard to Army Aviation, the **Light Utility Helicopter (LUH)** program is executing the Army transformation strategy successfully and meeting all cost, schedule, and performance targets as specified in the acquisition strategy. The aircraft has been fielded to the National Training Center at Fort Irwin, California; the Joint Readiness Training Center at Fort Polk, Louisiana; and the U.S. Army Transportation Corps at Fort Eustis, Virginia. Additionally, the LUH has been fielded to Army National Guard (ARNG) units in thirteen states.

The Army is procuring 345 aircraft with a firm fixed price contract. To date, the Army has purchased 182 UH-72 Lakota LUH aircraft – 100 aircraft have been delivered and more than 92 fielded. The UH-72A continues to demonstrate exceptional readiness rates that exceed 90 percent. The Lakota is currently conducting Medical Evacuation, VIP, and general support missions. It has also been fielded to ARNG units to conduct disaster relief, counter drug operations, and institutional training missions.

Production of the LUH is transitioning successfully from Germany to Columbus, Mississippi. Forty aircraft were produced in Germany and the remaining 305 are being produced in the United States as part of a three phase production duplication plan. The first phase of the transition, with the majority of production done in Germany, was completed in May 2009. The second phase of the transition, which with split production between Columbus and Germany, produced about a third of the LUH aircraft delivered. The third phase, full production line operations in Columbus, has been operational since October 2009 with over 30 aircraft on the line. Deliveries will be exclusively from

Columbus beginning in October 2010. Increasing domestic content is also part of the production duplication plan and is expected to exceed the 65 percent goal.

The ARNG is funded to procure, apply, and sustain 100 Mission Equipment Packages consisting of searchlight, Forward Looking Infrared, situational awareness/command and control moving map displays, hoists, and Medical Evacuation kits for the Security and Support battalions in their support of the homeland security/homeland defense/counter-drug mission. A Critical Design Review process has been completed with prototype integration underway since January. This prototype aircraft will be available for evaluation in June 2010. The ARNG will receive their first retrofit aircraft in February 2011 and their first production aircraft in January 2012.

The **CH-47 Chinook** is a proven heavy-lift helicopter, supporting our Soldiers every day in Iraq and Afghanistan and conducting missions that no other helicopter on the battlefield can accomplish. It is the Army's only helicopter capable of intra-theater cargo movement of payloads up to 16,000 pounds. The Army is committed fully to the procurement of 533 Army CH-47F and U.S. Special Operations Command MH-47G aircraft. To date, the Army has taken delivery of 84 CH-47F and 54 MH-47G aircraft, has an additional 209 CH-47F and seven MH-47G aircraft on contract, has trained and fielded five operational CH-47F Chinook units – four of which have deployed to the theater of operations, with one unit currently deployed.

The U.S. Army signed a five-year firm-fixed price contract for 181 CH-47F Chinook aircraft that will achieve a minimum savings of \$450 million or 11 percent. The multi-year contract provided for 34 option aircraft, 10 of which were executed with the basic contract, and 10 more have been executed since. The CH-47F Chinook program is on-cost, on-schedule, and has met or exceeded all performance requirements.

The **UH-60 Black Hawk** is the work horse of Army Aviation. The current UH-60 fleet is comprised of 1,826 aircraft, including 918 UH-60As (produced between 1978

and 1989), 660 UH-60Ls (produced since 1989), and 137 new UH-60Ms. The Black Hawk helicopter is in its 33rd year of production. To date, the Army has employed seven multi-year, multi-service production contracts. The current contract extends from FY07 to FY11 and includes Navy H-60 aircraft, as well as Foreign Military Sales aircraft. The Army is negotiating a follow on multiservice contract this year.

The ongoing UH-60A to UH-60L recapitalization program extends the service life of the Black Hawk program, while providing the improved capability and safety margin of the UH-60L. The Army plans to induct 48 aircraft in FY10 and 240 aircraft between FY11 and FY16. The UH-60M program incorporates a digitized cockpit for improved combat situational awareness, lift, range, and handling characteristics for enhanced maneuverability and safety. These improvements also extend the service life of the aircraft. The Army plans to improve the safety of the UH-60M platform with a Preplanned Product Improvement technology. Additionally, the Army intends to pursue an Improved Turbine Engine Program shared with the AH-64 Apache fleet.

To support the potential procurement of a manned-armed aerial scout helicopter, the Army conducted a comprehensive review of the armed reconnaissance capability requirements and initiated a formal '**Analysis of Alternatives**' (AoA). The AoA is ongoing and scheduled to be completed in April 2011. The AoA is taking a holistic look at the armed aerial scout requirements and including in its analysis manned and unmanned systems, as well as the probable use of a manned-unmanned team of systems to address the capabilities needed. Due to the time required to complete these assessments, the Army is currently pursuing an Acquisition Category II level, Cockpit and Sensor Upgrade Program, as well as several fielded fleet upgrades to sustain the **Kiowa Warrior** fleet safely until 2025.

The **AH-64D Apache** continues to meet the tremendous challenges of today's combat environment and remains an important capability for our deployed forces. The Apache fleet today consists of 717 aircraft – 126 AH-64A models and 591 AH-64D

Longbow Apaches. At any given time in the recent years, we have had five to six battalions deployed, five units returning, and five units preparing to go to war. We have also delivered 41 of 66 War Replacement Aircraft, which are the first new-build Apaches since the A-models were built during the 1980s.

The ARNG Apache Modernization effort is on track. The last four AH-64A ARNG battalions will be equipped with AH-64D Longbow Apaches by 2013 and all AH-64As will be out of the operational fleet. The first three of these battalions will be modernized with remanufactured Longbows and the fourth battalion will receive Longbows via a cascade plan.

Continued modernization, including the ongoing fielding of the Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor, is enabling our aircrews to engage and defeat the enemy at longer ranges with a resultant increase in overall lethality and significantly improved survivability and safety. The addition of new capabilities requested by our field commanders, such as Manned Unmanned Teaming Level 2 (MUMT-2) which brings interoperability among UAVs, ground stations, and the Apache, demonstrates our dedication to providing the tools to the commander in the field needs for mission success.

Block III is the sustainment effort for Apache that delivers the required operational capabilities to ensure the aircraft remains a viable combat multiplier beyond 2030. The cornerstone to the Block III program is the insertion of mature technologies into a proven weapon system platform. Longbow evolution maintains Army interoperability with Joint, MUM, and future Army requirements. The high operational tempo in Iraq and Afghanistan, coupled with repeated deployments of Longbow units, has depleted a high percentage of the Apache airframes' useful life. The majority of aircraft will enter Block III remanufacture with less than 50 percent of the airframe's design life (10,000 hours) remaining. With Block III, we will reset the Apache life

expectancy by introducing new airframe structures into the remanufacturing line, restoring 100 percent of the design life back to the fielded unit at minimal cost.

Apache is the Army's only manned aviation platform able to meet the network centric requirements of the future force, as well as Joint Force requirements. It is also the first aircraft designed for and fully capable of complete control of UAVs, known as Level 4 control. This characteristic fully enables the synergistic manned-unmanned teaming between attack aircraft and UAVs that is showing great promise on the battlefield.

The Apache Block III System Development and Demonstration remains on schedule and within budget. The upcoming Milestone C decision will enable Block III to enter LRIP with first delivers expected in October of 2011 and First Unit Equipped being November 2012.

The Army is endorsing fully the **Joint Future Theater Lift** effort. Here, the Army is partnering with the Air Force to examine the alternative designs to provide the Joint Commander with the ability to emplace medium weight combat vehicles at or near the objective without the reliance on fixed airfields or improve surfaces. In the next few months, the Army will participate in the AoA that will look at the concepts of the Joint Future Theater Lift, develop the alternatives, and move us further along to determine the feasibility of a materiel solution.

The **Unmanned Aircraft Systems** (UAS) are a rapidly growing capability that Army Aviation has helped to develop. As an example of how quickly this capability has grown within the Army, when Operation Iraqi Freedom (OIF) began in March 2003, there were only 3 systems (13 aircraft) deployed in support of that operation. Today, we have 337 systems (1,013 aircraft) in OIF and Operation Enduring Freedom (OEF). This capability continues its fast growth. For example, it took the Army 13 years to fly the first 100,000 hours of UAS. It took us less than a year to fly the next 100,000 hours,

and now we fly more than 220,000 hours each year. By May 2010, Army UAS will have flown one million flight hours, almost 90 percent of which were flown in support of combat operations.

The **Extended Range/Multipurpose** (ER/MP) UAS will be deployed and integrated with the CAB, with immediate responsive **Reconnaissance, Surveillance, and Target Acquisition** (RSTA) to the Division Commander. The ER/MP can carry multiple simultaneous payloads to include: (1) Electro-optical/Infrared/Laser Designator; (2) Synthetic Aperture Radar; (3) Communications Relay; and (4) Weapons. The ER/MP UAS will use both Tactical Common Data Link and Satellite Communications data links. The program deployed a Quick Reaction Capability to OIF in July 2009 and will deploy another to OEF in summer 2010 in support of the surge. The Program of Record will field its First Unit Equipped in FY11.

The hand-launched and rucksack portable **Raven** Small Unmanned Aircraft System provides the small unit with enhanced situational awareness and increased force protection through expanded reconnaissance and surveillance coverage of marginal maneuver areas. Commanders at the company level have greater ability to shape over-the-hill operations with their own dedicated UAS. In addition to the Army, the Raven is fielded to the U.S. Special Operations Command, the Marine Corps, the Air Force, and ARNG, providing support for Overseas Contingency Operations while also providing increased capabilities for domestic mission responsibilities as required. We have fielded 1,318 systems (3,954 aircraft), and there are 291 Raven Systems (873 aircraft) currently supporting Soldiers in Iraq and Afghanistan, with over 201,900 flight hours in OIF and 39,800 flight hours in OEF. The program is meeting all cost, schedule, and performance targets.

The **Shadow** Tactical Unmanned Aircraft System provides DoD and coalition partners with a high quality, reliable, and interoperable UAS. Currently, units are flying at an OPTEMPO of up to eight times what was originally envisioned for the system.

While the OPTEMPO remains high, the accident rate has been reduced each year. The Marine Corps is partnered with the Army for purchase of Shadow systems, support equipment, and performance based logistics services. Through this approach, economies of scale provide efficiencies for cost, commonality, and Joint operations. Currently, 75 systems (300 aircraft) have been delivered and fielded to the Army and nine systems (36 aircraft) to the Marine Corps. The readiness rate of the Shadow system averages above 98 percent. As of February 2010, the total hours flown by Shadow in support of theater operations were 436,885 hours, out of a total program history of 479,806 hours flown. More than 91 percent of all Shadow hours flown since 2,000 have been in support of theater operations.

The Program Executive Office (PEO) Integration **Class I UAS** will provide significantly enhanced networked capabilities to the force. Class I systems are ducted fan air vehicles with a single integrated gimbal consisting of an electro optical camera, infrared camera, laser range finder, and laser designator. The Class I mission is to provide RSTA to the platoon and company. The system's hover and stare capability allows it to stay in one place for an extended period of time while its maneuverability allows it to operate in complex environments that would be impractical for current force fixed wing UAS.

The Class I leverages technologies developed by the Defense Advanced Research Projects Agency as part of the gas Micro Air Vehicle (gMAV) program. The gMAV has interchangeable electro optical and infrared camera. Currently, 15 systems (29 aircraft) are in use in OIF by the 2nd Infantry Division, with over 199 flight hours in 407 sorties. The Class I block 0, a gMAV variant, is in development and testing by PEO Integration as part of the Spin Out effort.

The **Persistent Threat Detection System** is a Quick Reaction Capability program with a tethered aerostat equipped with a high resolution electro-optic/infra-red camera system. It is integrated with existing radar, infra-red, and acoustic systems that

cue the aerostat payload to provide near real-time eyes on target for continuous surveillance and detection in support of missions in theater. Currently, a total of five systems have been deployed in OEF and three in OIF.

Constant Hawk is another successful Quick Reaction Capability program supporting counter improvised explosive device (C-IED) efforts in OIF. It provides airborne persistent surveillance capability that allows analysts to backtrack a sequence of events, detect the event, and identify its origin. We currently have four systems deployed in OIF as part of Task Force Observe, Detect, Identify, Neutralize (ODIN). Due to its demonstrated capability and successes in Iraq, we have three Constant Hawk systems programmed for Task Force ODIN-Afghanistan.

The **Enhanced Medium Altitude Reconnaissance and Surveillance System** (MARSS) evolved from the Aerial Common Sensor (ACS) requirement set. The EMARSS is a manned multi-intelligence airborne ISR system that provides a persistent capability to detect, locate, classify/identify, and track surface targets in day/night, near-all-weather conditions with a high degree of timeliness and accuracy.

The EMARSS will consist of an Electro-optic/Infrared (EO/IR) FMV sensor, a Communications Intelligence collection system, an Aerial Precision Guidance system, line-of-sight tactical and beyond line-of-sight communications suites, and a self-protection suite. This combination of attributes provides the ground tactical commander an assured near-real-time operational view of the battlespace enabling tactical ground forces to operate at their highest potential.

The Requirements Process

Finally, the Army has developed and refined a dynamic, flexible process to review, validate, resource, and acquire critical warfighting capabilities rapidly to meet operational needs while minimizing risk through due diligence. This accelerated

process complements the standard, more deliberate Joint Capabilities Integration and Development System that is generally used for requirements determination. It capitalizes on "real time" feedback from commanders in the field and, through its improved responsiveness, has significantly enhanced operations in Iraq and Afghanistan.

The Army prides itself as a learning organization and continues to make a concerted effort to codify the positive refinements in its processes that we have made during the prolonged conflicts in Iraq and Afghanistan. In keeping with this trend, this accelerated process for validation of operational needs has been documented in the latest update of Army Regulation 71-9, Warfighting Capabilities Determination, published on December 28, 2009.

Operational Needs Statement and Joint Urgent Needs Statements

The Chief of Staff of the Army's vision to "build a versatile mix of tailorable and networked organizations, operating on a rotational cycle, to provide a sustained flow of trained and ready forces for full spectrum operations and to hedge against unexpected contingencies at a sustainable tempo for our all-volunteer force" is supported by an accelerated requirements review and decision process used for evaluating and fulfilling operational needs statements (ONS) and joint urgent operational need statements (JUONS). This accelerated process provides a high degree of tailorability and increased versatility to our efforts to provide materiel capabilities for deployed and deploying commanders and units.

Following mission analysis based on battlefield experiences, operational commanders use the ONS and JUONS process to identify materiel shortfalls in their current organizations that, if remedied, could correct a deficiency or improve a capability that enhances mission accomplishment. The ONS is particularly useful to support Army units that are assigned "nonstandard" missions for which they are not normally equipped.

The ONS and JUONS requests can be made for either nonstandard capabilities that can be procured from commercially available items or for quantities of standard Army equipment that exceed the organization's authorization. Additionally, the ONS provides a mechanism for commanders to request new capabilities that do not currently exist within the Army.

Army commanders submit ONS through the chain of command to the Army Staff for review and approval, while JUONS are submitted through the chain of command to the Joint Staff for approval. Since the beginning of the current conflicts, 98 percent of urgent operational needs identified by Army commanders have been submitted using ONS, while 2 percent have been submitted using the JUONS. The majority of ONS received from Army commanders are for increases in standard Army capabilities or equipment while the majority of JUONS are for new capabilities or equipment that do not exist in current Army materiel inventories. In 2009, commanders requested more than 6,000 separate types of equipment through approximately 2,500 ONS. The rapid fielding of MRAPS to Iraq and Afghanistan is an example of capabilities provided rapidly through a JUONS. The increase in basis of issue for night vision goggles and the provision of hand held radios to deployed units are examples of capabilities fielded rapidly through ONS.

Accelerated Requirements

In addition to streamlining the process for identifying operational needs rapidly, the Army has established procedures to deliver capabilities rapidly to units deployed to Afghanistan and Iraq by modifying the requirements validation, funding, and acquisition processes associated with these urgent needs. As you may suspect, the Army is forced to accept a slightly higher degree of risk regarding system integration when performing these activities in parallel. To mitigate and manage the risk, we have developed and use a senior leader decision making forum known as the Army Requirements and Resourcing Board (AR2B) to inform our actions through this process. The AR2B

synchronizes the assessment, validation, resourcing, and sourcing of urgent capabilities within the Department. The AR2B coordinates weekly with theater to prioritize efforts and to insure capabilities being developed meet evolving theater operational needs. The flexibility granted from Congress concerning reprogramming of funds has been instrumental to the success of this forum.

The Army is tackling unique integration challenges responding to urgent needs identified by commanders in Afghanistan. The relatively primitive infrastructure of Afghanistan and the restricted lines of communication through which materiel must flow into the theater is causing us to pay greater attention in synchronizing the delivery of capabilities, logistics, training, and manning considerations of accelerated acquisition programs than we had in the past when dealing with requests originating out of Iraq. For example, in Iraq where we had the advantage of an established infrastructure, the Army was able to rapidly field and integrate into the force more than thirty variants of the MRAPs. A priority of Afghanistan is reducing the number of logistics requirements by having as few variants as possible. For this reason, the staff is being more deliberate in its decision making to ensure that fielded capabilities are supportable.

Transition of Rapidly Acquired Capability

To capitalize fully on the accelerated process, the Army developed institutional processes designed to integrate proven wartime capabilities into the Army's standard materiel management system. This work is accomplished through the Army Centers for Lesson Learned and through the CDRT process. The Army uses unit commander feedback and TRADOC assessments to develop recommendations on whether a wartime capability should be transitioned to an enduring Army capability. Examples of capabilities recommended as enduring capabilities through the CDRT process include the Tactical Ground Reporting (TIGR) System and the Green Laser Dazzler. The TIGR system improves situational awareness and facilitates collaboration at the company level by enabling the collection and dissemination of fine-grained intelligence on people,

places, and insurgent activity. The Green Laser Dazzler is a non-lethal weapon used to create temporary vision impairment to stop someone from advancing.

Reform Initiatives for the Deliberate Process

From a requirements point of view, and consistent with DoD's High Priority Performance Goals in the President's FY11 Budget's Analytic Perspectives volume, the Army is implementing the Weapon Systems Reform Act of 2009 through the management of more comprehensive AoAs, Configuration Steering Boards (CSBs), and Capability Portfolio Reviews (CPRs). The Army is working closely with OSD – Cost Assessment and Program Evaluation to develop AoA guidance, with special emphasis on costs and benefits, and to review AoA products. The Army is conducting CSBs regularly to review requirements and to determine the status of programs. The Army senior leadership is conducting Army-wide, all-component, CPRs to review requirements and priorities holistically and make recommendations to revalidate, modify or drop requirements. The objective is to ensure that funds are programmed, budgeted, and executed against validated requirements that are cost and risk-informed.

The Army has demonstrated great flexibility in adjusting its requirements review and development processes to be more effective in the contemporary operating environment. After several years of refinement, the Army has a process that reviews, validates, resources, and acquires critical warfighting capabilities rapidly to meet commanders operational needs while maintaining the good stewardship expected of our institution. We have been able to find the balance in making institutional processes more responsive while minimizing operational risk through due diligence. Lastly, the Army is also ensuring that the investment in materiel for the current conflicts is leveraged and incorporated into its long-term equipping strategy.

In Closing

In support of Army Modernization, the Army has submitted a Research, Development and Acquisition budget request of \$31.7B for FY11. We believe that this budget allocates resources appropriately between bringing advanced technologies to our Soldiers currently in the fight and developing new technologies to bring the required capabilities to our Soldiers in the future. As such, we meet our leadership's intent of concurrently preparing our Soldiers for success in the current conflict and transforming to meet the demands of the 21st century.

And although the Army does not have any unfunded requirements, as with any budget request, there are areas where additional resources could enhance existing programs. A letter to that effect, detailing eight areas where additional funding would provide value to the Army, was transmitted by the Chief of Staff of the Army to the Chairman of the House Armed Services Committee, Representative McKeon, on February 19, 2010.

Mr. Chairman, Mr. Bartlett, and Members of the Committee, on behalf of our Soldiers, we greatly appreciate the tremendous support we receive from this Congress and the American people. We urge you to provide full, timely, and predictable funding to implement the plans we have shared with you today successfully. The Army is modernizing, seeking to restore balance while setting conditions for the future. Our goal is to balance current and future requirements and risks to make certain that we can defend the Nation – today and tomorrow.

FOR OFFICIAL USE ONLY
UNTIL RELEASED BY THE
HOUSE ARMED SERVICES
SUBCOMMITTEE ON
AIR AND LAND FORCES

TESTIMONY OF

DR. J. MICHAEL GILMORE

DIRECTOR, OPERATIONAL TEST AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE

BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
ARMED SERVICES SUBCOMMITTEE ON AIR AND LAND FORCES

March 10, 2010

FOR OFFICIAL USE ONLY
UNTIL RELEASED BY THE
HOUSE ARMED SERVICES
SUBCOMMITTEE ON
AIR AND LAND FORCES

Dr. J. Michael Gilmore
Director, Operational Test and Evaluation (DOT&E)
Office of the Secretary of Defense

Mr. Chairman, Congressman Bartlett, distinguished members of the Committee, thank you for the opportunity to provide my assessment of test results for the Early Infantry Brigade Combat Team (E-IBCT) Increment 1, my assessment of the test plans for the Ground Mobile Radio and Handheld, Manpack, Small Form Factor variants of the JTRS program, and my assessment of test planning for the Extended Range Multi-Purpose (ERMP) Unmanned Aerial System.

Assessment of E-IBCT Test Results

My operational assessment of the Early Infantry Brigade (E-IBCT) Increment 1 performance is based upon the results of the E-IBCT Limited User Test (LUT 09) conducted in August - September 2009 and the Non Line of Sight Launch System (NLOS-LS) Flight LUT conducted in January - February 2010. My assessment is supplemented with data from developmental testing, as appropriate.

Each of the E-IBCT systems requires further development prior to conducting an Initial Operational Test and Evaluation (IOT&E) in FY11 or fielding. All of the systems have notable performance deficiencies. The demonstrated operational reliability for each of the systems falls significantly below the user threshold requirements.

LUT 09 was the first operational test of the E-IBCT systems. It was conducted at Fort Bliss, Texas, and consisted of an infantry company and scout platoon equipped with E-IBCT systems executing full spectrum operations against a threat force composed of conventional mechanized forces and paramilitary forces with civilians present on the battlefield. The force-on-force test consisted of four 96-hour scenarios with the test unit executing fourteen offensive, defensive, and stability missions. Operations were conducted both day and night. Live firing of the NLOS-LS was conducted during the NLOS-LS Flight LUT at White Sands Missile Range, New Mexico, in January-February 2010.

Many of the systems tested in LUT 09 were not in the same configuration as the systems intended for purchase. The Small Unmanned Ground Vehicle used a

production radio, the remaining five systems used pre-production radios and waveforms. Numerous changes to be implemented in the E-IBCT systems to be produced (as compared to those tested in LUT 09) had been identified prior to LUT 09. The program manager has informed DOT&E that additional changes will be made to address the reliability problems discovered during the LUT. The first opportunity to test the effects of these changes and any others made to address performance problems identified in LUT 09 will be the E-IBCT LUT to be conducted in August-September 2010 (LUT 10). The E-IBCT systems have not been tested against electronic warfare or computer network attack threats. E-IBCT operations in an electronic warfare and computer network attack environments will be assessed in LUT 10.

My key findings with respect to the performance of the individual E-IBCT systems are summarized below.

Non Line of Sight Launch System (NLOS-LS). NLOS-LS requires further developmental and operational flight tests to demonstrate improvement in missile reliability and the performance of the missile's infrared (IR) seeker. The demonstrated missile reliability is 61 percent, below the 85 percent requirement. Missiles using the IR seeker in developmental and LUT flight tests hit 5 of 11 targets. The program needs to conduct additional testing and allocate adequate time to demonstrate performance and implement fixes to improve reliability. The NLOS-LS Container Launch Unit met its reliability requirement during LUT 09, demonstrating a 259-hour mean time between system abort versus a 125-hour requirement. During the February 10 Flight LUT, problems with the NLOS-LS navigation system caused six of the seven total system aborts that occurred during a small number of operating hours, resulting in a mean time between system abort of 12 hours. This was the first test using a new software version for the NLOS-LS navigation system. Soldiers received numerous fault codes from the NLOS-LS navigation system when they initialized the CLU. Failure review is ongoing. The effectiveness of fixes to the navigation system and other failure modes should be tested in the E-IBCT LUT 10 later this year.

NLOS-LS is making progress in some performance areas. Missiles using the laser-designate mode demonstrated success in operational and developmental testing,

hitting 5 of 7 targets. The missile warhead can kill armored vehicles when it hits vulnerable areas. In LUT 09, the NLOS-LS Container Launch Unit was interoperable with the fire support network and was effective in processing electronic fire commands. During LUT 09, the test unit effectively engaged armored targets with the NLOS-LS in simulated fire missions. When simulated and evaluated to be successful, NLOS-LS had a significant impact on the battle by destroying threat armored vehicles.

The NLOS-LS Flight LUT was the first operational flight test of the system. Soldiers from the Army Expeditionary Task Force Fires Battalion fired six missions at operationally representative threat targets. Forward observers using their tactical equipment acquired actual threat tanks, armored combat vehicles, and a commercial truck. The tanks and armored combat vehicles had realistic threat countermeasures. The Precision Attack Munition and the Container Launch Unit were production representative. During the Flight LUT, two of six missiles fired achieved target hits and four missed their targets. Two of the missiles impacted 14 or more kilometers short of the target. The cause of one miss is known: the CLU misinterpreted temperature data sent by the Advanced Field Artillery Data System. This caused the missile to safe the warhead and ignore the laser designation missing the target. The Army has identified potential causes for two other misses involving the motor in the precision attack munition and a circuit board failure.

The Army has informed DOT&E that the program is completing Failure Review Board investigations of the developmental and operational flight failures. I recommend the Army conduct additional developmental and operational flight testing once all of the necessary corrective measures have been identified and applied.

Network Integration Kit (NIK). In LUT 09, the NIK demonstrated a capability to receive sensor data from the Tactical Unattended Ground Sensor and Urban Unattended Ground Sensor Gateways and to interoperate with the Force XXI Battle Command Brigade and Below battle command network by passing messages and still images. The NIK operated with pre-production pre- Engineering Development Model Joint Tactical Radio System Ground Mobile Radios which are not certified to pass classified traffic. The NIK did not meet its reliability requirement, demonstrating a 33-

hour mean time between system abort versus a requirement of 112 hours. The NIK had a lengthy boot up time of 30-35 minutes versus a 10 minute requirement for a warm start reboot. The capability of the NIK to pass classified data using low probability of intercept waveforms will be evaluated in LUT 10.

Class 1 Block 0 Unmanned Aerial System. The Class 1 UAS meets most of its air vehicle flight and sensor performance requirements. This system was heavily used by the test unit to perform intelligence, surveillance, and reconnaissance tasks. The UAS was not employed as the back-packable company-level and platoon-level asset envisioned by the user. Due to poor system reliability, the unit consolidated these systems under centralized battalion-level control to achieve system redundancy. The UAS does not have the range or endurance necessary to conduct missions within a larger battalion area of operations. An assessment cannot be made of the effectiveness of the UAS employed in the platoon/company role for which it is designed.

The Class 1 UAS is not reliable, demonstrating a mean time between system abort of 1.5 hours versus a 23-hour user threshold requirement.

Small Unmanned Ground Vehicle Block 1 (SUGV). During LUT 09, the SUGV demonstrated a capability for remote investigation of potential threats. The test unit successfully demonstrated the capability to transmit still images from the SUGV to the Network Integration Kit via an Unattended Ground Sensor Gateway. The SUGV sensor performs satisfactorily in daylight, providing images that can identify personnel at 100 meters, achieving the user requirement. The SUGV does not meet the user requirement for recognizing personnel at night. The most significant SUGV operational deficiency is the limited communications range between the operator and the SUGV. The SUGV user requirement calls for a 1,000 meter line-of-sight tele-operation range. This range allows the operator to employ the robot at a safe distance while conducting reconnaissance of potentially hazardous locations. During LUT 09, much shorter ranges were achieved. Typical tele-operation ranges were 125-150 meters in open terrain and 50-75 meters in and around buildings. These short tele-operation ranges exposed SUGV operators to hostile fire. Several operators were evaluated as killed during the LUT.

During LUT 09, the SUGV demonstrated a 5.2-hour mean time between system abort versus a requirement of 42 hours.

Urban Unattended Ground Sensor (U-UGS). The U-UGS demonstrated little contribution to unit situational awareness, providing limited actionable intelligence. Images were often blurry or blank and not readable. During LUT 09, the Leader Display and Control Device was not used by the unit, although it is essential to providing local unit leaders U-UGS alerts and images. The U-UGS has demonstrated a capability to transmit images to the NIK via a gateway device. The U-UGS is not reliable, demonstrating a mean time between system abort of 25 hours versus a requirement of 105 hours.

Tactical Unattended Ground Sensor (T-UGS). The T-UGS provided little contribution to unit situational awareness. During LUT 09, it provided no actionable intelligence to the test unit, with half of its photo images blank or blurry. The T-UGS demonstrated a capability to transmit images to the NIK. The T-UGS is not reliable, demonstrating a mean time between system abort of 52 hours versus a requirement of 127 hours.

Reliability. The Army Test and Evaluation Command calculated reliability growth potentials for the NIK, U-UGS, T-UGS, SUGV and Class 1 UAS that are all below the reliability thresholds associated with each system. Thus, the reliability desired for these systems is not achievable by IOT&E without an extensive design-for-reliability effort by the Army.

Assessment of the Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR) and Handheld, Manpack, Small Form Factor (HMS) Test Plans

The Joint Tactical Radio System (JTRS) Handheld, Manpack and Small Form Fit (HMS) and Ground Mobile Radio (GMR) are schedule-driven programs working to complete system development prior to operational tests scheduled for November 2010.

Readiness for and successful completion of these operational tests are dependent upon the success of developmental testing, development of supporting waveforms and network management tools, and the completion of user requirements such as radio network architectures and plans for network management.

The JTRS HMS program completed the Rifleman Radio Limited User Test (LUT) in April 2009. This test highlighted deficiencies in reliability, battery life, range and an immature Concept of Operations. The Rifleman Radio reliability, battery life, and transmission range were well below user requirements. The Concept of Operations did not provide sufficient radio discipline during combat. The program will conduct a series of tests from April - June 2010 to verify correction of deficiencies. The results of these tests will support a Milestone C review in August 2010. The program is scheduled to conduct the Rifleman Radio Initial Operational Test (IOT) in November 2010, in conjunction with the JTRS HMS Manpack LUT.

The JTRS HMS program is executing Manpack radio developmental testing leading to the Manpack LUT in November 2010. This LUT will be conducted in conjunction with the Rifleman Radio IOT. Completion of planning for these tests awaits JTRS HMS Manpack user requirements.

The JTRS GMR program is experiencing an eight-month delay in developmental testing due to late delivery of hardware and software. Because the schedule for conducting the GMR LUT in November 2010 has remained unchanged despite the delay in development, this shift in schedule has reduced the time available to develop corrective actions for deficiencies discovered during developmental testing prior to conducting the LUT.

The JTRS GMR LUT is dependent upon the delivery of a functional Wideband Networking Waveform (WNW) and network management tools. WNW version 3.1 demonstrated low throughput and poor message completion rates during the April 2009 WNW 30-Node Test. The JTRS Network Enterprise Domain (NED) has conducted production qualification testing on JTRS WNW version 4.0.1 and has made this version available for integration into GMR. The National Security Agency identified security issues with WNW 4.0.1 and will reassess an updated WNW 4.0.2 for corrections.

The JTRS GMR is a critical component of the NIK and provides transfer of data, imagery and voice communications within the E-IBCT. Delays in the GMR program could affect plans for fielding the E-IBCT.

The Army's ability to execute the overall JTRS test schedule leading to the three scheduled operational tests (Rifleman Radio IOT, Manpack LUT and GMR LUT) in November 2010 is of great concern due to a lack of time to address corrective actions, the dependence upon supporting waveform and network management success, and the need to complete user requirements.

Assessment of the testing plan for the Extended Range Multi-Purpose (ERMP) Unmanned Aircraft System (UAS)

The ERMP program has grown in complexity and scope since Milestone B in April 2005 as a result of the following:

- The Secretary of Defense directed a surge in intelligence, surveillance, and reconnaissance support in Iraq and Afghanistan.
- The program transitioned from an Acquisition Category II to an Acquisition Category ID program.
- The Department accelerated procurement and fielding timelines and increased production quantities from 11 to 14 systems.

The surge provided impetus for completing the ERMP Test and Evaluation Master Plan which I approved in December 2009 in support of the Milestone C decision in February 2010. The master plan calls for a series of operational tests conducted in conjunction with unit training to support the intelligence, surveillance, and reconnaissance surge, as well as completion of the ERMP program of record. The surge units are two "Quick Reaction Capability" platoon-size organizations – QRC 1 and 2. Major components of each are four aircraft, two Ground Control Stations and one "legacy" Ground Control Station. The program of record system is a company-size organization. Major components include 12 aircraft and 5 Ground Control Stations.

The Army conducted a Customer Test in April 2009. Using the results of that test and developmental testing, as appropriate, DOT&E provided an Early Fielding Report to the Defense Committees in September 2009 assessing the ERMP QRC 1 unit's ability to accomplish its war time mission. In that Early Fielding Report I conclude the QRC 1 unit effectively employed the ERMP system. Demonstrated performance of the aircraft and the electro-optical infrared payload met requirements. Poor One System Ground Control Station software reliability hindered, but did not prevent, successful mission execution. The QRC 1 unit was able to successfully complete missions using line-of-sight Tactical Common Data Links in spite of incomplete development and integration within the ERMP system. Development of the Satellite Communications (SATCOM) data link between the Ground Control Station and the aircraft was not complete and therefore the QRC 1 unit was not able to utilize beyond line-of-sight SATCOM during the test. The communications relay capability had limited range. The Quick Reaction Capability 1 unit completed deployment in August 2009 and began conducting combat operations in Iraq in November 2009.

In addition to the Early Fielding Report, I provided an operational assessment to support the Milestone C Low Rate Initial Production decision in February 2010. That assessment combined the results of the Customer Test, developmental testing completed since the Customer Test, and demonstrated performance of the deployed QRC 1 unit.

In that report I conclude that the ERMP system has continued to mature since the Customer Test. In addition to demonstrating the capability to autonomously and cooperatively employ Hellfire missiles, the program has implemented improvements to the reliability and performance of the satellite, Tactical Common Data Link, and other radio communications. SATCOM is now fully operational, Tactical Common Data Link communications are performing at the required 300-kilometer ranges, and the communications relay capability has improved from 30 to 60 kilometers.

The Army plans to conduct a Limited User Test, in conjunction with unit training at the National Training Center with the QRC 2 unit in May-June 2010, and deploy the unit later in the year. The operational assessment resulting from this test event will support the second Low Rate Initial Production decision. The Customer Test and the Limited User Test are excellent examples of combining training and testing to support a

rapid fielding initiative. The upcoming Limited User Test at the National Training Center is being conducted with organizations that the ERMP QRC 2 unit will support when deployed.

Full production-representative system testing will occur in the Initial Operational Test and Evaluation conducted in FY 2011 and Follow-on Operational Test and Evaluation conducted in FY 2012. Like the Limited User Test, the Initial Operational Test and Evaluation and Follow-on Test and Evaluation will be conducted in conjunction with a unit's deployment training at the National Training Center. The need for Follow-on Test and Evaluation is due to the planned change from the currently fielded Lynx II to the production-representative STARlite Synthetic Aperture Radar / Ground Moving Target Indicator payload.

My assessment of the planned testing for ERMP is that it is robust and is an excellent example of conducting training and testing to support rapid fielding initiatives and the acquisition program of record.

United States Government Accountability Office

GAO

Testimony
Before the Subcommittee on Air and
Land Forces, Committee on Armed
Services, House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EDT
Wednesday, March 10, 2010

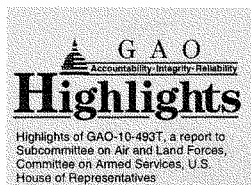
DEFENSE ACQUISITIONS

Opportunities for the Army to Position Its Ground Force Modernization Efforts for Success

Statement of Michael J. Sullivan, Director
Acquisition and Sourcing Management



GAO-10-493T



Why GAO Did This Study

Since 2003, the Future Combat System (FCS) program has been the centerpiece of the Army's efforts to transition to a lighter, more agile, and more capable combat force. In 2009, however, concerns over the program's performance led to the Secretary of Defense's decision to significantly restructure and ultimately cancel the acquisition program. As a result, the Army is outlining a new approach to ground force modernization. This statement outlines the Army's preliminary post-FCS actions and identifies the challenges DOD and the Army must address as they proceed. This testimony is based on GAO's report on the Army's Ground Force Modernization effort scheduled for release March 15, 2010. It emphasizes the December 2009 decision to begin low-rate initial production for Increment 1 of the Brigade Combat Team Modernization.

What GAO Recommends

In its draft report that is currently with DOD for comment, GAO recommended that the Secretary of Defense mandate the Army correct the identified maturity and reliability issues with the Increment 1 systems and network prior to approving any additional production lots. The GAO also recommended the Secretary of the Army not field the Increment 1 network or systems until the identified maturity and reliability issues have been corrected. DOD has not yet responded to the GAO recommendations.

View GAO-10-493T or key components. For more information, contact Michael J. Sullivan at (202) 512-4841 or sullivanm@gao.gov.

March 10, 2010

DEFENSE ACQUISITIONS

Opportunities for the Army to Position its Ground Force Modernization Efforts for Success

What GAO Found

The Army is implementing DOD direction and redefining its overall modernization strategy as a result of the Secretary of Defense's decision to significantly restructure the FCS program. It is transitioning from the FCS long-term acquisition orientation to a shorter-term approach that biannually develops and fields new increments of capability within capability packages. It now has an approved acquisition program that will produce and field the initial increment of the FCS spinout equipment, which includes unmanned aerial and ground vehicles as well as unattended sensors and munitions. It has preliminary plans for two other major defense acquisition programs to (1) define and develop follow-on increments and (2) develop a new Ground Combat Vehicle (GCV). The individual systems within Increments 1 and 2 are to be integrated with a preliminary version of an information network. Currently, the Army is continuing selected development work—primarily that related to Increments 1 and 2, and the information network—under the existing FCS development contract. The Army has recently released a request for proposals for the technology development phase of the proposed GCV development effort. The Army's projected investment in Increments 1 and 2 and GCV is estimated to be over \$24 billion through fiscal year 2015.

With these modernization efforts at an early stage, DOD and the Army face the immediate challenge of setting them on the best possible footing by buying the right capabilities at the best value. DOD and the Army have an opportunity to better position these efforts by utilizing an enhanced body of acquisition legislation and DOD policy reforms—which now incorporate many of the knowledge-based practices that GAO has previously identified—as well as lessons learned from the FCS program. Preliminary plans suggest the Army and DOD are strongly considering lessons learned. However, DOD recently approved the first of several planned low-rate initial production lots of Increment 1 despite having acknowledged that the systems and network were immature, unreliable, and not performing as required. That decision reflects DOD's emphasis on providing new capabilities quickly to combat units. This decision did not follow knowledge-based acquisition practices and runs the risk of delivering unacceptable equipment to the warfighter and trading off acquisition principles whose validity has been so recently underscored.

The Army needs to seize the opportunity of integrating acquisition reforms, knowledge-based acquisition practices, and lessons-learned from FCS into future modernization efforts to increase the likelihood of successful outcomes.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss some of the Department of the Army's ground force modernization efforts as it moves away from the now-cancelled Future Combat System (FCS) program. My statement today is based on the work we conducted over the last year in response to a request from this subcommittee. This statement focuses on the Army's post-FCS acquisition plans. In particular, it emphasizes the December 2009 decision to begin low-rate initial production for Increment 1 of the Brigade Combat Team Modernization. Our upcoming report on the Army's ground force modernization efforts, scheduled for release next week, will provide additional information on the Army's efforts.¹

This statement is based on work we conducted between March 2009 and March 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Since it started development in 2003, FCS has been at the center of the Army's efforts to modernize into a lighter, more agile, and more capable combat force. The FCS concept involved replacing existing combat systems with a family of manned and unmanned vehicles and systems linked by an advanced information network. The Army anticipated that the FCS systems, along with the soldier and enabling complementary systems, would work together in a system of systems wherein the whole provided greater capability than the sum of the individual parts. The Army expected to develop this equipment in 10 years, procure it over 13 years, and field it to 15 FCS-unique brigades—about one-third of the active force at that time. The Army also had planned to spin out selected FCS technologies and systems to current Army forces throughout the system development and demonstration phase.

¹GAO, *Defense Acquisitions: Opportunities Exist to Position the Army's Ground Force Modernization Efforts for Success*, GAO-10-406 (Washington, D.C.: Mar. 15, 2010).

As we have reported in 2009,² the FCS program was immature and unable to meet DOD's own standards for technology and design from the start. Although adjustments were made, such as adding time and reducing requirements, vehicle weights and software code grew, key network systems were delayed, and technologies took longer to mature than anticipated (see fig. 1). By 2009, after an investment of 6 years and an estimated \$18 billion, the viability of the FCS concept was still unknown. As such, we concluded that the maturity of the development efforts was insufficient and the program could not be developed and produced within existing resources.

Figure 1: FCS Acquisition Program (2003 versus 2009)

	2003	2009	
Cost estimate (Fiscal year 2009 billions of dollars)	Research and development: \$20.9	Research and development: \$29.0	\$8.1 billion increase
	Procurement: \$68.2	Procurement: \$129.3	\$61.1 billion increase
	Total: \$89.8	Total: \$159.3	\$69.5 billion increase
Schedule (Milestone B to initial operational capability)	7 yr 6 mo	12 yr 3 mo	Over 4 1/2 years added
Requirements	Undefined	System-level requirements not matched with emerging designs	Persistent gaps
Software lines of code	34 million	114+ million	Tripled in size
Projected maturity date of critical technologies ^a	2006	2009	3 years added

Source: DOD (data); GAO (analysis and presentation).

^aFor FCS, the Army projected maturity based on a Technology Readiness Level 6, which is a representative model or prototype that has been tested in a relevant environment, but requires additional work for the appropriate form, fit, and function. Based on our best practices work, technologies that have reached a Technology Readiness Level 7, a prototype demonstrated in a realistic environment, are mature.

In April 2009, the Secretary of Defense proposed a significant restructuring of the FCS program to lower risk and address more near-term combat needs. The Secretary noted significant concerns that the FCS program's

²*Defense Acquisitions: Decisions Needed to Shape Army's Combat Systems for the Future*, GAO-09-288 (Washington, D.C.: March 12, 2009).

vehicle designs—where greater information awareness was expected to compensate for less armor, resulting in lower weight and higher fuel efficiency—did not adequately reflect the lessons of counterinsurgency and close-quarters combat operations in Iraq and Afghanistan. As such, the Secretary recommended

- accelerating fielding of ready-to-go systems and capabilities to all brigades,
- canceling the vehicle component of the FCS program, reevaluating the requirements, technology, and approach, and re-launching the Army's vehicle modernization program, and
- addressing fee structure and other concerns with current FCS contracting arrangements.

In June 2009, the Under Secretary of Defense for Acquisition, Technology, and Logistics issued an acquisition decision memorandum that canceled the FCS acquisition program, terminated manned ground vehicle development efforts, and laid out plans for follow-on Army brigade combat team modernization efforts. DOD directed the Army to transition to an Army-wide modernization plan consisting of a number of integrated acquisition programs, including one to develop ground combat vehicles.

Subsequently, the Army has been defining its ground force modernization efforts per the Secretary's decisions and the June 2009 acquisition decision memorandum. Although the details are not yet complete, the Army took several actions through the end of calendar year 2009. It stopped all development work on the FCS manned ground vehicles—including the non-line of sight cannon—in the summer of 2009 and recently terminated development of the Class IV unmanned aerial vehicle and the countermine and transport variants of the Multifunction Utility/Logistics and Equipment unmanned ground vehicle. For the time being, the Army is continuing selected development work under the existing FCS development contract, primarily residual FCS system and network development. In October 2009, the Army negotiated a modification to the existing contract that clarified the development work needed for the brigade modernization efforts.

The Army Has Started a Series of Development and Fielding Efforts

The Army is implementing DOD direction and redefining its overall modernization strategy as a result of the Secretary of Defense's decisions to significantly restructure the FCS program. It is transitioning from the FCS long-term acquisition orientation to a shorter-term approach that biannually develops and fields new increments of capability within capability packages. It now has an approved acquisition program that will

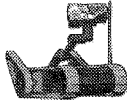








produce and field the initial increment of the FCS spinout equipment, which includes unmanned aerial and ground vehicles as well as unattended sensors and munitions, and preliminary plans for two other major defense acquisition programs to define and develop follow-on increments and develop a new GCV. The Army also plans to integrate network capabilities across the Army's brigade structure and to develop and field upgrades to other existing ground force equipment.

- The first program, Increment 1, is a continuation of previous FCS-related efforts to spin out emerging capabilities and technologies to current forces. Of the Army's post-FCS modernization initiatives, Increment 1, which includes such FCS remnants as unmanned air and ground systems, unattended ground sensors, the non-line-of-sight launch system, and a network integration kit, is the furthest along in the acquisition development cycle (see fig. 2). The network integration kit includes, among other things, the integrated computer system, an initial version of the system-of-systems common operating environment (SOSCOE), early models of the Joint Tactical Radio System, and a range extension relay.³ In December 2009, the Army requested and DOD approved, with a number of restrictions, the low-rate initial production of Increment 1 systems that are expected to be fielded in the fiscal year 2011-12 capability package.⁴ The Army will be continuing Increment 1 development over the next 2 years while low-rate initial production proceeds. The projected development and production cost to equip nine brigades with the Increment 1 network and systems, supported by an independent cost estimate, would be about \$3.5 billion.

³SOSCOE is the operating environment that serves as middleware between operating systems and software applications.

⁴The Army had developed a concept of continual modernization of ready-to-go capabilities through biannual deliveries of what are called capability packages.

Figure 2: Increment 1 Systems

	<p>Small Unmanned Ground Vehicle (SUGV) Block 1</p> <p>Provides enhanced situational awareness and force protection through reduced exposure to hazards during soldier-intensive and/or high-risk functions.</p>
<p>Integrated Computer</p>  <p>JTRS</p>  <p>Multi-Band Antennas</p> 	<p>Network Integration Kit (NIK)</p> <p>Provides enhanced communications and situational awareness through radios with multiple software waveforms, connections to unattended sensors, and links to existing networking capabilities.</p>
<p>Detection Node</p>  <p>Imaging Node</p> 	<p>Urban Unattended Ground Sensor (U-UGS)</p> <p>Provides force protection in an urban setting through a leave-behind, network-enabled reporting system of movement and/or activity in cleared areas.</p>
	<p>Class 1 Unmanned Aerial Vehicle Block 0</p> <p>Provides independent, soldier-level aerial reconnaissance, surveillance, and target acquisition capability.</p>
	<p>Non-Line-of-Sight Launch System (NLOS-LS)</p> <p>Provides the ability to precisely attack armored, lightly armored, and stationary or moving targets at extended ranges despite weather/environmental conditions and/or presence of counter-measures.</p>
	<p>Tactical Unattended Ground Sensor (T-UGS)</p> <p>Provides enhanced situational awareness, force protection, and early warnings in a tactical setting through cross-cues to sensors and weapon systems.</p>

Source: Army (data and photos); GAO (analysis and presentation).

- For the second acquisition program, Increment 2 of brigade modernization, the Army has preliminary plans to mature Increment 1 capabilities—potentially demonstrating full FCS threshold

requirements—as well as contributing further developments of SOSCOE and battle command software, and demonstrating and fielding additional capabilities. For example, these may include the Armed Robotic Vehicle Assault (Light)—an unmanned ground vehicle configured for security and assault support missions—and the Common Controller, which will provide the dismounted soldier a handheld device capable of controlling, connecting, and providing data transfer from unmanned vehicles and ground sensors. Army officials indicated they are currently working to define the content, cost, and schedule for Increment 2 with a low-rate initial production decision planned for fiscal year 2013 and a Defense Acquisition Board review expected in the third quarter of fiscal year 2010.

- The third acquisition program would develop a new GCV. The Army reviewed current fighting vehicles across the force structure to determine whether to sustain, improve, divest, or pursue new vehicles based on operational value, capability shortfalls, and resource availability. Per DOD direction, the Army also collaborated with the Marine Corps to identify capability gaps related to fighting vehicles. For development of a new GCV, the Army's preliminary plans indicate the use of an open architecture design to enable incremental improvements in modular armor; network architecture; and subcomponent size, weight, power, and cooling. According to a DOD official, DOD and the Army met recently to make a materiel development decision on the GCV and the Army was subsequently authorized to release a request for proposals for GCV technology development.⁵ Over the next several months, the Army will be conducting an analysis of alternatives to assess potential materiel solutions for the GCV. The Army expects to follow the analysis with a Milestone A decision review on whether to begin technology development in September 2010.⁶ After Milestone A, Army officials are proposing the use of competitive prototyping with multiple contractors—the number of which will depend on available funding—during the technology development phase, which will feature the use of mature technologies and the fabrication and testing of prototype

⁵A materiel development decision is a review that is the formal entry point into the acquisition process and is mandatory for all programs. A successful materiel development decision may approve entry into the acquisition management system at any point consistent with phase-specific entrance criteria and statutory requirements.

⁶Milestone A is the point at which a program enters the technology development phase; Milestone B is entry into the engineering and manufacturing development phase; and Milestone C is entry into the production and deployment phase.

subsystems. In the technology development phase, the contractors will be expected to fabricate and evaluate several subsystem prototypes including an automotive test rig and a mine blast test asset. The contractors will also be expected to develop a near-critical design review level design for their integrated vehicle and, in the process, inform the GCV concept development document. That document is expected to be finalized at the Milestone A decision point. Competitive prototypes will be fabricated and tested during the engineering and manufacturing development phase. A preliminary design review would be used to validate contractor readiness to enter detailed design at Milestone B in fiscal year 2013. The Army's preliminary plans indicate that the first production vehicles could be delivered in late fiscal year 2017, about 7 years from Milestone A.

- The Army is planning to incrementally develop and field an information network to all of its brigades in a decentralized fashion, that is, not as a separate acquisition program. The Army has defined a preliminary network strategy and is in the process of defining what the end state of the network will need to be, as well as how it may build up that network over an undefined period of time. In the near term, the Army is working to establish a common network foundation to build on and to define a common network architecture based on what is currently available and expected to come available in the near future. Current communications, command and control, and networking acquisition programs will continue and will be expected to build on to the current network foundation and architecture over time. Networking capabilities will be expected to meet specific standards and interface requirements. According to Army officials, the ongoing incremental network and software development activities and requirements will be dispersed to these acquisition programs, where they will be considered for further development and possible fielding. The only original FCS network development activities that the Army plans to continue under the FCS development contract are those supporting the network integration kit for Increment 1 and whatever additional networking capabilities may be needed for Increment 2. DOD expects the Army to present network development plans in March 2010.

Table 1: Army Budget Requests for Fiscal Year 2011 and Fiscal Years 2012-2015 for Increments 1 and 2 and GCV (millions of dollars)

Research and Development	Fiscal Year 2011	Fiscal Years 2012-2015
Increment 1 & 2	1,568.0	4,126.0
GCV	934.4	6,245.4
Subtotal	2,502.4	10,371.4
Procurement		
Increments 1 & 2	682.6	9,840.5
GCV	0	876.2
Subtotal	682.6	10,716.7
Total	3,185.0	21,088.1

Source: Fiscal Year 2011 President's Budget.

As shown in Table 1 above, the Army is proposing to make substantial investments in its post-FCS acquisition initiatives. For fiscal year 2011, the Army is proposing research and development funding of about \$2.5 billion and procurement funding of about \$683 million. For the following four years (fiscal years 2012-2015), the Army plans additional research and development investments of about \$10.4 billion and procurement investments of about \$10.7 billion.

Recent Army Contract Actions Related to its Post-FCS Efforts

For the time being, the Army is continuing selected development work—primarily that related to Increment 1, Increment 2, and network development—under the existing FCS development contract. In October 2009, the Army negotiated a modification to the existing contract, which clarified the development work needed for the brigade modernization efforts. The Army previously awarded a contract for long lead item procurement for Increment 1. A modification to that contract was recently issued to begin low-rate initial production of the Increment 1 systems. The Army has also recently released a request for proposals for the technology development phase of the proposed GCV development effort.

Contractor proposals for GCV are expected to include plans and/or solutions for, among other things, survivability (hit avoidance system, armor, and vehicle layout) and mobility (propulsion and power generation and cooling). According to the request for proposals, the proposals can utilize prior Army investment in armor recipes, but they will not get an inherent advantage for doing so. Each solution will be based on its own merits. Contractor proposals are to be submitted in April 2010 and

contract awards, for cost-plus type contracts, are to be awarded after the Milestone A decision in September 2010.

**Acquisition Direction
and FCS Lessons
Learned Offer
Opportunities to
Promote Successful
Outcomes, But
Decision to Proceed
with Initial
Production is
Premature**

The challenge facing both DOD and the Army is to set these ground force modernization efforts on the best footing possible by buying the right capabilities at the best value. In many ways, DOD and the Army have set modernization efforts on a positive course, and they have an opportunity to reduce risks by adhering to the body of acquisition legislation and policy reforms—which incorporate knowledge-based best practices we identified in our previous work—that have been introduced since FCS started in 2003. The new legislation and policy reforms emphasize a knowledge-based acquisition approach, a cumulative process in which certain knowledge is acquired by key decision points before proceeding. In essence, knowledge supplants risk over time. Additionally, DOD and the Army can further reduce risks by considering lessons learned from problems that emerged during the FCS development effort. Initial indications are that the Army is moving in that direction. However, in the first major acquisition decision for the Army's post-FCS initiatives, DOD and the Army—because they want to support the warfighter quickly—are proceeding with low-rate initial production of one brigade set of Increment 1 systems despite having acknowledged that the systems are immature, unreliable, and cannot perform as required.

**New Acquisition Reforms
Point Way to Lower Risk**

The body of acquisition legislation and DOD policy reforms introduced since FCS started in 2003 incorporates nearly all of the knowledge-based practices we identified in our previous work (see table 2). For example, DOD acquisition policy includes controls to ensure that programs have demonstrated a certain level of technology maturity, design stability, and production maturity before proceeding into the next phase of the acquisition process. As such, if the Army proceeds with preliminary plans for new acquisition programs, then adherence to the acquisition direction in each of its new acquisition efforts provides an opportunity to improve the odds for successful outcomes, reduce risks for follow-on Army ground force modernization efforts, and deliver needed equipment more quickly and at lower costs. Conversely, acquisition efforts that proceed with less technology, design, and manufacturing knowledge than best practices suggest face a higher risk of cost increases and schedule delays.

Table 2: Comparison of Controls Used in Best Practices Model and DOD Policy

Commercial best practices model	May 2003 DOD policy	December 2008 DOD policy
Knowledge point 1: Occurs as programs begin the engineering and manufacturing development phase (Milestone B). Match exists between requirements and resources. Technologies needed to meet essential product requirements have been demonstrated to work in their intended environments and the producer has completed a preliminary design of the product.		
Demonstrate high technology readiness levels	X	X
Ensure product requirements are informed by the systems engineering process	X	X
Establish cost and schedule estimates for product based on knowledge from preliminary design using systems engineering tools		X
Conduct decision review for program launch	X	X
Knowledge point 2: Occurs at the critical design review between integration and demonstration. Design is stable and has been demonstrated through prototype testing. Ninety percent of engineering drawings are releasable to manufacturing organizations.		
Complete 90 percent of design drawings		^a
Complete subsystem and system design reviews		X
Demonstrate with prototype that design meets requirements	X	X
Obtain stakeholder concurrence that drawings are complete and producible		^b
Complete failure modes and effects analysis		X
Identify key system characteristics		X
Identify critical manufacturing processes		X
Establish reliability targets and growth plan based on demonstrated reliability rates of components and subsystems		X
Conduct design review to enter system demonstration	X	X
Knowledge point 3: Occurs at low-rate initial production commitment. Product is ready to be manufactured within cost, schedule, and quality targets. All key manufacturing processes are under statistical control and product reliability has been demonstrated.		
Demonstrate manufacturing processes		X
Build production-representatives prototypes		X
Test production-representative prototypes to achieve reliability goal		^c
Test production-representative prototypes to demonstrate the product in a realistic environment		X
Collect statistical process control data		X
Demonstrate that critical processes are capable and under statistical control		X
Conduct decision review to begin production	X	X

Sources: DOD (data); GAO (analysis and presentation).

^aDOD criteria do not specify the percentage of drawings to be completed at the critical design review.^bDOD's revised policy includes the post-critical design review assessment, which is the Milestone Decision Authority's assessment of the program manager's critical design review. However, we could not determine whether stakeholder concurrence was necessary to proceed.^cDOD criteria establish reliability goals, but do not specify testing on production-representative prototypes.

As shown in table 2, the cumulative building of knowledge consists of information that should be gathered at three critical points over the course of a program:

Knowledge point 1 (at the program launch or Milestone B decision): Establishing a business case that balances requirements with resources. At this point, a match must be made between the customer's needs and the developer's available resources—technology, engineering, knowledge, time, and funding. A high level of technology maturity, demonstrated via a prototype in its intended environment, indicates whether resources and requirements match. Also, the developer completes a preliminary design of the product that shows that the design is feasible and that requirements are predictable and doable.

Knowledge point 2 (at the critical design review between design integration and demonstration): Gaining design knowledge and reducing integration risk. At this point, the product design is stable because it has been demonstrated to meet the customer's requirements as well as cost, schedule, and reliability targets. The best practice is to achieve design stability at the system-level critical design review, usually held midway through system development. Completion of at least 90 percent of engineering drawings at this point provides tangible evidence that the product's design is stable, and a prototype demonstration shows that the design is capable of meeting performance requirements.

Knowledge point 3 (at production commitment or the Milestone C decision): Achieving predictable production. This point is achieved when it has been demonstrated that the developer can manufacture the product within cost, schedule, and quality targets. The best practice is to ensure that all critical manufacturing processes are in statistical control—that is, they are repeatable, sustainable, and capable of consistently producing parts within the product's quality tolerances and standards—at the start of production.

The Army did not position the FCS program for success because it did not establish a knowledge-based acquisition approach—a strategy consistent with DOD policy and best acquisition practices—to develop FCS. The Army started the FCS program in 2003 before defining what the systems were going to be required to do and how they were going to interact. It moved ahead without determining whether the FCS concept could be developed in accordance with a sound business case. Specifically, at the FCS program's start, the Army had not established firm requirements, mature technologies, a realistic cost estimate, or an acquisition strategy

wherein knowledge drives schedule. By 2009, the Army still had not shown that emerging FCS system designs could meet requirements, that critical technologies were at minimally acceptable maturity levels, and that the acquisition strategy was executable within estimated resources.

With one notable exception, there are initial indications that DOD and the Army are moving forward to implement the acquisition policy reforms as they proceed with ground force modernization, including the Secretary of Defense's statement about the ground vehicle modernization program—to "get the acquisition right, even at the cost of delay." In addition, DOD anticipates that the GCV program will comply with DOD acquisition policy in terms of utilizing competitive system or subsystem prototypes. According to a DOD official, a meeting was recently held to consider a materiel development decision for the GCV, and the Army is proposing to conduct a preliminary design review on GCV before its planned Milestone B decision point. Additionally, a configuration steering board is planned for later in 2010 to address reliability and military utility of infantry brigade systems.

Army's Decision to Proceed with Low Rate Initial Production for Increment 1 Increases Risk

In the first major acquisition decision for the Army's post-FCS initiatives, DOD and the Army—because they want to support the warfighter quickly—are proceeding with low-rate initial production of Increment 1 systems despite having acknowledged that systems are immature, are unreliable, and cannot perform as required. In December 2009, the Under Secretary of Defense for Acquisition, Technology, and Logistics approved low-rate initial production of Increment 1 equipment for one infantry brigade but noted that there is an aggressive risk reduction plan to grow and demonstrate the network maturity and reliability to support continued Increment 1 production and fielding. In the associated acquisition decision memorandum, the Under Secretary acknowledged the risks of pursuing Increment 1 production, including early network immaturity; lack of a clear operational perspective of the early network's value; and large reliability shortfalls of the network, systems, and sensors. The Under Secretary also said that he was aware of the importance of fielding systems to the current warfighter and that the flexibility to deploy components as available would allow DOD to "best support" the Secretary of Defense's direction to "win the wars we are in." Because of that, the Under Secretary specified that a number of actions be taken over the next year or more and directed the Army to work toward having all components for the program fielded as soon as possible and to deploy components of the program as they are ready. However, the Under Secretary did not specify the improvements that the Army needed to make

or that those improvements are a prerequisite for approving additional production lots of Increment 1.

The approval for low-rate initial production is at variance with DOD policy and Army expectations. DOD's current acquisition policy requires that systems be demonstrated in their intended environments using the selected production-representative articles before the production decision occurs. However, the testing that formed the basis for the Increment 1 production decision included surrogates and non-production-representative systems, including the communications radios. As we have previously noted,⁷ testing with surrogates and non-production-representative systems is problematic because it does not conclusively show how well the systems can address current force capability gaps. Furthermore, Increment 1 systems—which are slated for a fiscal year 2011-12 fielding—do not yet meet the Army's expectations that new capabilities would be tested and their performance validated before being deployed in a capability package. As noted in 2009 test results, system performance and reliability during testing was marginal at best. For example, the demonstrated reliability of the Class I unmanned aerial vehicle was about 5 hours between failure, compared to a requirement for 23 hours between failure. The Army asserts that Increment 1 systems' maturity will improve rapidly but admits that it will be a "steep climb" and not a low-risk effort.

While the Under Secretary took current warfighter needs into account in his decision to approve Increment 1 low-rate initial production, it is questionable whether the equipment can meet one of the main principles underpinning knowledge-based acquisition—whether the warfighter needs can best be met with the chosen concept. Test reports from late 2009 showed conclusively that the systems had limited performance, and that this reduced the test unit's ability to assess and refine tactics, techniques, and procedures associated with employment of the equipment. The Director, Operational Test and Evaluation, recently reported that none of the Increment 1 systems have demonstrated an adequate level of performance to be fielded to units and employed in combat. Specifically, the report noted that reliability is poor and falls short of the level expected of an acquisition system at this stage of development. Shortfalls in meeting reliability requirements may adversely affect Increment 1's overall operational effectiveness and suitability and may increase life-cycle costs.

⁷GAO-09-288

In addition, in its 2009 assessment of the increment's limited user test—the last test before the production decision was made—the Army's Test and Evaluation Command indicated that the Increment 1 systems would be challenged to meet warfighter needs. It concluded that, with the exception of the Non-Line-of-Sight Launch System, which had not yet undergone flight testing, all the systems were considered operationally effective and survivable, but with limitations, because they were immature and had entered the test as pre-production representative systems and/or pre-engineering design models. Additionally, the Command noted that these same systems were not operationally suitable because they did not meet required reliability expectations.

Concluding Remarks

Army and DOD officials made a very difficult decision when they canceled what was the centerpiece of Army modernization—the FCS program. As they transition away from the FCS concept, both the Army and DOD have an opportunity to improve the likely outcomes for the Army's ground force modernization initiatives by adhering closely to recently enacted acquisition reforms and by seeking to avoid the numerous acquisition pitfalls that plagued FCS. As DOD and the Army proceed with these significant financial investments, they should keep in mind the Secretary of Defense's admonition about the new ground vehicle modernization program: "get the acquisition right, even at the cost of delay." Based on the preliminary plans, we see a number of good features such as the Army's decision to pursue an incremental acquisition approach for its post-FCS efforts. However, it is vitally important that each of those incremental efforts adheres to knowledge-based acquisition principles and strikes a balance between what is needed, how fast it can be fielded, and how much it will cost. Moreover, the acquisition community needs to be held accountable for expected results, and DOD and the Army must not be willing to accept whatever results are delivered regardless of military utility.

We are concerned that in their desire for speedy delivery of emerging equipment to our warfighters in the field, DOD and the Army did not strike the right balance in prematurely approving low-rate initial production of Increment 1 of brigade modernization. Although the Army will argue that it needs to field these capabilities as soon as possible, none of these systems have been designated as urgent and it is not helpful to provide early capability to the warfighter if those capabilities are not technically mature and reliable. If the Army moves forward too fast with immature Increment 1 designs, then that could cause additional delays as the Army and its contractors concurrently address technology, design, and production

issues. Production and fielding is not the appropriate phase of acquisition to be working on such basic design issues.

In our upcoming report, we will make recommendations intended to reduce the risk of proceeding into production with immature technologies. In that regard, we will recommend that the Secretary of Defense mandate that the Army correct the identified maturity and reliability issues with the Increment 1 network and systems prior to approving any additional lots of the Increment 1 network and systems for production. Specifically, the Army should ensure that the network and the individual systems have been independently assessed as fully mature, meet reliability goals, and have been demonstrated to perform as expected using production-representative prototypes. We will also recommend that the Secretary of the Army should not allow fielding of the Increment 1 network or any of the Increment 1 systems until the identified maturity and reliability issues have been corrected.

Mr. Chairman, this concludes my prepared statement. I would be happy to answer any questions you or members of the subcommittee may have.

Contacts and Staff Acknowledgements

For future questions about this statement, please contact me on (202) 512-4841 or sullivanm@gao.gov. Individuals making key contributions to this statement include William R. Graveline, Assistant Director; William C. Allbritton; Andrea M. Bivens; Noah B. Bleicher; Tana M. Davis; Marcus C. Ferguson; and Robert S. Swierczek.

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to www.gao.gov and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

To Report Fraud, Waste, and Abuse in Federal Programs**Contact:**

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548



Please Print on Recycled Paper

**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

MARCH 10, 2010

RESPONSE TO QUESTION SUBMITTED BY MR. KISSELL

General LENNOX. The Army is actively acquiring and pursuing a broad range of capabilities to counter an equally broad range of cyber threats. For example, the Army is acquiring capabilities that not only address network and enclave perimeter security but also host-based security, e-mail security, web security, cyber situational awareness, cyber forensics analysis and other requirements. Concurrently, the Army is transforming the business processes for procurement and acquisition of products that defend against cyber attacks, beginning with its process for vetting Information Assurance (IA) products. The Army has hosted several meetings with other DoD organizations, including Office of the Secretary of Defense/Networks Information Integration (OSD/NII) and the Defense Information Systems Agency (DISA), to discuss testing at the product level. The Army is actively engaged with OSD/NII in the staffing of DODI 8100.EE, Unified Capability, which is intended to establish procedures for achieving reciprocity throughout DoD for key information technology products. [See page 18.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 10, 2010

QUESTIONS SUBMITTED BY MR. KISSELL

Mr. KISSELL. During the hearing I asked about the Army's procurement and acquisition of products to defend against cyber attacks. Is the Army pursuing feasible solutions to the wide variety of cyberthreats?

General LENNOX and General PHILLIPS. The Army is actively acquiring and pursuing a broad range of capabilities to counter an equally broad range of cyber threats. For example, the Army is acquiring capabilities that not only address network and enclave perimeter security but also host-based security, e-mail security, web security, cyber situational awareness, cyber forensics analysis and other requirements. Concurrently, the Army is transforming the business processes for procurement and acquisition of products that defend against cyber attacks, beginning with its process for vetting Information Assurance (IA) products. The Army has hosted several meetings with other DoD organizations, including Office of the Secretary of Defense/Networks Information Integration (OSD/NII) and the Defense Information Systems Agency (DISA), to discuss testing at the product level. The Army is actively engaged with OSD/NII in the staffing of DODI 8100.EE, Unified Capability, which is intended to establish procedures for achieving reciprocity throughout DoD for key information technology products.

Mr. KISSELL. Is the Army integrated into the national defense strategy?

General LENNOX and General PHILLIPS. Yes, the Army is fully integrated into the national defense strategy. As stated in the report of the 2010 Quadrennial Defense Review, the national defense strategy recognizes that "the Department of Defense balances resources and risk among four priority objectives: prevail in today's wars, prevent and deter conflict, prepare to defeat adversaries and succeed in a wide range of contingencies, and preserve and enhance the All-Volunteer Force."

Due to our national objectives and the character of the conflict in Afghanistan and Iraq, Army forces—multipurpose and special operations—are the forces of choice for prevailing in today's wars. Both of those wars involve operations among the people which highly value the human intelligence capabilities of ground forces and the discriminate, precision application of force that only ground forces can provide. Your Army also provides the expeditionary endurance necessary to convert immediate battlefield successes into longstanding strategic success.

In nearly all of our Nation's wars, significant ground forces have played a central role in achieving our national political objectives. The same is true today in Afghanistan and Iraq. Army forces are versatile. They can be employed across the spectrum of operations to support civil authorities and render assistance to distressed people, to restore basic services to populations, to secure and rebuild nations as part of the interagency team, and defeat state and non-state forces that threaten our national interests or our allies.

Finally, the priority objective of preserving and enhancing the All-Volunteer Force is aimed, we believe, directly at the Army. Our Soldiers and their Families have willingly and selflessly deployed multiple times to Iraq and Afghanistan, but the stress of eight plus years at war is felt on every Army installation, in every Army unit, and in every Army Family. We are dedicated to doing whatever is necessary to fully support those Soldiers and Families that have dedicated their lives to the defense of our Nation.

Mr. KISSELL. How does Cyber Command plan on organizing, training, and coordinating with the Services?

General LENNOX and General PHILLIPS. As Cyber Command is under the purview of U.S. Strategic Command, issues related to that organization are outside our purview upon which to provide a response.

Mr. KISSELL. Is the Army vulnerable to an attack that could compromise operations in Iraq, Afghanistan, or Korea?

General LENNOX and General PHILLIPS. Just like any organization with a large computer network, the Army faces daily risk of attacks and is constantly identifying and defending against new and emerging threats. While network security in a combat zone is of high importance and has its own specific and particular challenges, the Army approaches network security at a global level. Vulnerabilities in any part of the network potentially create a possible attack vector, which ultimately could af-

fect Army operations. Risks range from something as simple as poor user training and out-of-date anti-virus software, to complex cyber attacks requiring the investment of millions of dollars to mitigate if the attack is successful. These costs do not begin to qualify or to quantify the impact to operations when a network is unavailable.

Currently, thousands of potential threats are defeated every day via technology fielded through multiple layers of network defense; and a structured, tiered response to actual incidents that minimizes the impact and the cost to operations. Additionally, the Army continues to identify and to invest in new technologies in order to keep pace with the known and predicted threats.

To meet the unique capabilities that Army operations require, the Army, under a three-star billet, will stand up Army Forces Cyber Command (ARFORCYBER), which also will support U.S. Cyber Command. The majority of the forces for a combined Army operations center are already in place at Fort Belvoir, VA. The new command will bring unprecedented unity of effort and will synchronize all Army forces operating within the cyber domain.

QUESTIONS SUBMITTED BY MR. OWENS

Mr. OWENS. Section 818 of the Fiscal Year 2010 National Defense Authorization Act allows the Secretary of Defense to “eliminate, modify, or add to the firms included in the small arms production base.” The original small arms industrial base legislation limiting competition was based on a 1994 Army Science Board report. Since the industry has substantially changed in the last 16 years, what changes will you make to the small arms industrial base to expand competition and encourage innovation?

General LENNOX. The Army will review its requirements for small arms critical repair parts and industrial capability to meet those repair parts requirements. If and when the Army determines that changes are supportable, the Army will make appropriate recommendations for change to the Secretary of Defense. At this time, the Army has no difficulty in acquiring critical repair parts, barrels, bolts and receivers, for the designated small arms.

Mr. OWENS. The Army Procurement Justification Book indicates the Army requests \$20.1 million to procure 11,494 M4 carbines and that the carbines will be procured from Colt Manufacturing Company, Inc. with a sole source, firm fixed price contract. Why is this a sole source contract and not competitively bid?

General LENNOX. The Army is initiating a new Individual Carbine full and open competition to potentially replace the M4. Until the new carbine is fielded, the Army must continue to sustain the M4 capability. If the Army were to compete the production of the M4, and a new vendor was selected, it would take up to two years to qualify the new vendor’s production line and would cause up to a two year break in M4 deliveries. As a result, the Army’s plans to seek a sole source justification and authorization for these reduced production deliveries.

Mr. OWENS. What are the Army’s plans to develop, test, and compete a follow-on to the M4?

General LENNOX. The Army will initiate a Full and Open competition for the next Individual Carbine (IC) as soon as the IC Capabilities Development Document is validated by the Joint Requirements Oversight Council. The candidate weapon systems will undergo various environmental and performance testing before the selection of the best overall candidate. The successful offeror will take over delivery of carbines to the Army as soon as it successfully completes all necessary additional testing, the production line quality is verified, and the production capacity is sufficient to meet the Force’s fielding requirements.