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**ARMY ACQUISITION AND  
MODERNIZATION PROGRAMS**

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HEARING

BEFORE THE

SUBCOMMITTEE ON TACTICAL  
AIR AND LAND FORCES

OF THE

COMMITTEE ON ARMED SERVICES  
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

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## ARMY ACQUISITION AND MODERNIZATION PROGRAMS

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HOUSE OF REPRESENTATIVES,  
COMMITTEE ON ARMED SERVICES,  
SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES,  
*Washington, DC, Wednesday, October 26, 2011.*

The subcommittee met, pursuant to call, at 2:00 p.m., in room 2118, Rayburn House Office Building, Hon. Roscoe G. Bartlett (chairman of the subcommittee) presiding.

### **OPENING STATEMENT OF HON. ROSCOE G. BARTLETT, A REPRESENTATIVE FROM MARYLAND, CHAIRMAN, SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES**

Mr. BARTLETT. Thank you for joining us. Today the Tactical Air and Land Force Subcommittee meets to receive an update on Army acquisition and modernization programs.

I would like to thank our witnesses for being here today. They are Lieutenant General Robert Lennox, Deputy Chief of Staff of the Army, G-8; Lieutenant General William Phillips, Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology; and Ms. Belva Martin, Government Accountability Office, Director of Acquisition and Sourcing Team.

Since the subcommittee last received testimony from Army leaders, there have been many programmatic changes to major Army programs. In addition to what I have stated before, major reductions in the Federal budget need to be a major element of correcting the Federal budget deficit. The Department of Defense must share in a fair and balanced way in these reductions. That process is already taking place under the Budget Control Act of 2011, with nearly \$500 billion in cuts planned for DOD [Department of Defense] over the next 10 years. Further cuts beyond the \$400-\$500 billion are possible, up to approximately one trillion dollars total over 10 years, under what Secretary Panetta has called the doomsday mechanism sequestration provision of the Budget Control Act.

It remains unclear how DOD would apportion funding reductions and how funding reductions will impact Army modernization programs.

The purpose of today's hearing is to get an update from the witnesses as to what changes may have to be made in their proposed acquisition programs in fiscal year 2012. We would like to hear from our witnesses what their major issues and concerns are. What should our Members be most aware of as the fiscal year 2012 request is finalized in Congress?

Finally, we would like to know the views of our witnesses on what potential impacts to Army capabilities could occur, particu-

larly in light of the possible reductions in the Army's procurement and R&D [Research and Development] budgets.

A couple of examples of our concerns are what we understand to be the Army's top two modernization priorities, the Ground Combat Vehicle [GCV] and the network.

The GCV program received Milestone A approval, entry into the technology development phase, in August of 2011. Although the program is currently under a General Accounting Office [GAO] protest, we do expect to learn more about the GCV acquisition strategy and requirement stemming from the most recent Office of the Secretary of Defense [OSD] acquisition decision memorandum. And for the network, we would like to learn more about how the recent Network Integration Exercises at Fort Bliss and White Sands Missile Range are helping the Army make informed budget decisions.

Most recently, Congress was informed that the Ground Mobile Radio [GMR], part of the Joint Tactical Radio System [JTRS] and the network, was terminated as a result of the Nunn-McCurdy process.

I thank all of you for your service to our country and for being here today, and I look forward to your testimony.

Now to my very good friend from Texas, the ranking member, Mr. Reyes.

[The prepared statement of Mr. Bartlett can be found in the Appendix on page 31.]

**STATEMENT OF HON. SILVESTRE REYES, A REPRESENTATIVE FROM TEXAS, RANKING MEMBER, SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES**

Mr. REYES. Thank you, Mr. Chairman, and let me add my welcome to all of the guests here this afternoon.

Today's hearing on Army modernization comes at a critical juncture for the future of the U.S. Army. On the one hand, with the end of war in Iraq, the Army may finally have a chance to improve dwell time for troops and their families and also to repair worn-out equipment.

At the same time, the war in Afghanistan continues, and the Army still has to be prepared to deploy troops to Korea and other potential flash points.

And finally, laid on top of those demands, the Army is conducting a planned drawdown in the size of the Army from 567,000 Active-Duty troops to around 520,000.

Balancing those three factors will no doubt, as the chairman pointed out, be difficult.

When one turns to the issue of modernizing the Army's equipment, I think it is important to remember what has been accomplished over the past 10 years.

First, the Army has fielded hundreds of UAVs [unmanned aerial vehicles] and other ISR [intelligence, surveillance, and reconnaissance] platforms that give today's soldiers far more capability to find the enemy and to understand their intentions.

Second, the Army has upgraded almost its entire vehicle fleet from Abrams tanks to trucks to Strykers to MRAPs [Mine Resistant Ambush Protected vehicles].

Third, the Army now provides personal soldier equipment vastly improved over what the troops were issued in 2001, including better body armor and personal weapons.

Fourth, the Army continues to invest in aviation capability, increasing both the quantity and the quality of helicopters in its force.

Fifth, the Army is working hard to get more network communications equipment in the field, including the large-scale "Network Integration Exercises" at Fort Bliss in my district.

Sixth, so while some programs didn't work out as planned, a lot of very smart investments were made and today's Army is better equipped than ever before.

However, the Army must continue to modernize in critical areas, to stay ahead and to plan for future threats. I felt that the modernization plan presented the Army at our hearing in April was a solid one, integrated plan for moving the Army forward on its top priorities which were pushing the network down to the soldiers, continuing to expand aviation capability, and third, investing in programs for the future.

However, since that hearing, Congress passed the Budget Control Act that will cut \$450 billion from DOD's budget over the next 10 years. Additional cuts may come from the supercommittee and certainly are a concern, since they may be possible.

How the Army plans to deal with those reductions in fiscal year 2012 is a major issue, I believe, for today's hearing. While I am confident the Army will do its best to adapt, I am concerned that disproportional cuts to modernization may be doing real damage to the future of our Army.

Too often discussions about, quote unquote, what the Army needs are focused exclusively on today's fight, even though Army leaders have to also focus on being ready for whatever the next challenge or conflict may be.

The Ground Combat Vehicle is one example. With the Army planning only incremental upgrades to Abrams and Bradley fighting vehicles in the future, it is clear that the Army must start investing now in the vehicle it will need in the 2020s. Despite the need, the GCV has already been delayed for months by contract delays and protests. If it does not move forward soon, then the Army won't have any new combat vehicles in development.

The Joint Air-to-Ground Missile, or JAGM, is another example. While Hellfire missiles are doing a great job today, in the future the Army will need a more capable missile to defeat advanced countermeasures from longer ranges. If it is terminated, as some press reports have suggested, then the future Army won't have the best missiles available and the Nation might lose critical missile research and development capability.

Overall, I am concerned that the Army's investments in critical future capabilities could bear the brunt of reductions in the Army's budget.

Having said that, Mr. Chairman, I look forward to hearing from our panel about the future of those programs and other concerns that may be on their minds. And with that, I yield back to you, Mr. Chairman.

[The prepared statement of Mr. Reyes can be found in the Appendix on page 34.]

Mr. BARTLETT. Thank you very much. We will proceed now with the panel's testimony and then go into questions. Without objection, all witnesses' prepared statements will be included in the hearing record.

General Lennox, please proceed with your opening remarks and you will be followed by General Phillips and Ms. Martin. Thank you.

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

General LENNOX. Good afternoon Chairman Bartlett, Congressman Reyes, and members of the committee.

Thank you for the opportunity to testify on Army acquisition and modernization. We will be providing the committee with an update on our Army's Affordable Modernization Strategy, its processes, and the changes in key programs since our last meeting in the spring.

On behalf of Secretary McHugh and General Odierno, I would like to take this opportunity to thank the members of this committee for your steadfast support and shared commitment in this endeavor to provide the more than 1 million men and women in our Army with world-class weapon systems and equipment to ensure mission success in combat.

The Army's equipment modernization goal is to develop and field a versatile and affordable mix of equipment to allow soldiers and units to succeed across a spectrum of conflict both today and tomorrow, and to maintain our decisive advantage over any enemy that we face.

Our first priority is to win today's fight. We currently have over 70,000 soldiers in Afghanistan and about 50,000 soldiers still serving in Iraq. And we must not forget them as they continue to serve them in harm's way, and I know this panel feels the same way.

Our second priority is to prepare for the future. To do this, our equipment modernization strategy provides a balanced approach and features really three aspects.

The first is we look at our portfolios in an integrated way trying to balance requirements, resources, and the acquisition process. And we have very consistent reviews of those portfolios.

Secondly, we are focusing on incremental modernization. We are trying to deliver improved capabilities as technologies mature, resources are available, and necessity dictates.

And third, we feel that in an ARFORGEN [Army Force Generation] matter, and that is really trying to match equipment with the mission that the soldiers are going to deploy on. So we will match equipment that they need, modernized for the mission that they have got.

We look forward to discussing our priority modernization programs which include the network, Ground Combat Vehicle, Joint Light Tactical Vehicle [JLTV], the Paladin program, Kiowa Warrior, and others.

We recognize that we must shape the Army of 2020 with the understanding of our national security obligations and the current fis-



cal crisis. We will constantly reform how we do business to remain good stewards of the resources that are provided to us, and we recognize that we may have a smaller Army in the future, but that smaller Army must be trained and equipped to defeat any adversary.

Mr. Chairman, members of the committee, I thank you again for your steadfast and generous support of the outstanding men and women of the United States Army, of Army civilians and their families, and we look forward to your questions.

[The joint prepared statement of General Lennox and General Phillips can be found in the Appendix on page 37.]

Mr. BARTLETT. Thank you very much. General Phillips.

**STATEMENT OF LTG WILLIAM N. PHILLIPS, USA, MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY (ACQUISITION, LOGISTICS AND TECHNOLOGY)**

General PHILLIPS. Chairman Bartlett, Ranking Member Reyes and distinguished members of this committee, thank you for the opportunity to appear before you and to discuss Army acquisition modernization and our acquisition strategies. I am really proud and honored to be here with my battle buddy, Lieutenant General Bob Lennox, and Ms. Martin from the GAO [Government Accountability Office].

Throughout our Affordable Modernization Strategy we are dedicated to meeting the needs of our soldiers around the world and around the clock.

We thank you for your wisdom and your strong support for our soldiers and their families. The Army acquisition community is committed to delivering enhanced capabilities to our soldiers in a timely and affordable manner. The Army has undertaken a number of efficiencies, initiatives, including streamlining the acquisition process to focus on collaboration among stakeholders early and upfront in the process, to properly align requirements and resources with our acquisition strategy, and we are closely examining technological maturity to achieve realistic program goals.

We are encouraging competition and innovative contracting strategies in order to control costs. We are a full partner in the Department of Defense Better Buying Initiatives. In fact, we are now and we have been for the past year changing the paradigm within Army acquisition and within the thought process of Army acquisition leaders as it relates to cost, schedule, and performance. We are aggressively challenging requirements and seeking tradeoffs that achieve greater affordability and executability of programs. We cannot afford any requirement at any cost.

We are implementing smarter test and evaluation strategies to get real-time soldier feedback, leveraging the Network Integration Exercise at White Sands Missile Range in Fort Bliss, and certainly we invite all of you, the members of this committee, to visit us out at Fort Bliss and White Sands Missile Range.

We are codifying our rapid acquisition procedures and introducing testing and prototyping earlier in the development cycle as other ways to reduce costs and risks, and to achieve more agile acquisition strategies. We must have realistic cost estimating from the very beginning of a program that provides insights into indi-

vidual requirements. We take our fiduciary responsibilities to Congress and the American people seriously, and we will take full advantage of every dollar that you provide us.

Our progress and successes are detailed in the written statement, and I won't go into them. General Lennox just mentioned some of them. MRAP M-ATV [Mine Resistant Ambush Protected All-Terrain Vehicle] and Stryker Double V Hull are those that are serving today in Afghanistan and saving lives.

There are others like counter improvised explosive devices [IED]. We do continue our efforts to improve soldier protection in body armor and vehicles, to bring the power of the network to the individual soldier, and to lighten the load of our soldiers as well.

Our strategy to meet these needs include conducting capability portfolio reviews, and as a result of the Weapon Systems Acquisition Reform Act, we have also implemented configuration steering boards [CSB], of which last year the Army completed 100 percent of all of the required CSBs mandated by statute.

Mr. Chairman, the Army is committed to improving our acquisition processes and delivering affordable programs that meet the needs of our soldiers today and tomorrow. We cannot fail. Our soldiers trust us that we will provide them the very best equipment so that they can succeed on the field of battle and that one day they can return home safely to their families and their friends. We cannot betray their trust.

In executing our responsibilities we will ensure that the Army remains the Nation's force for decisive action.

Mr. Chairman and distinguished members of this subcommittee, 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 that ensures mission success and the safe return home of our soldiers.

I look forward to your questions, Mr. Chairman.

[The joint prepared statement of General Phillips and General Lennox can be found in the Appendix on page 37.]

Mr. BARTLETT. Thank you very much. Ms. Martin.

**STATEMENT OF BELVA M. MARTIN, DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, GOVERNMENT ACCOUNTABILITY OFFICE**

Ms. MARTIN. Chairman Bartlett, Ranking Member Reyes and members of the subcommittee, I am pleased to be here today to discuss the Army recent modernization efforts. I will summarize my prepared statement.

As background, the Army has faced some struggles in its modernization program since terminating their Future Combat System, known as FCS, in June of 2009.

I would now like to highlight four key areas.

First, when GAO testified before this subcommittee in March, we raised issues about GCV in the areas of urgency of the need, cost and affordability, analysis of alternatives to meet the need, and plausibility of delivering a production vehicle in 7 years. While DOD and the Army have increased their oversight of the program, these questions are still relevant, and it is expected that they will be fully explored during the current technology development phase.

The Army has a challenge ahead to identify a feasible and cost-effective solution to meet its needs.

Second, during the recently completed technology development phase, the Army and the Marine Corps learned that some of their original projected requirements for JLTV were not achievable. The services are now planning to have industry build prototypes for testing before a production decision to save time and money. However, there is a risk with this strategy. Even with demonstrated prototypes, skipping the detailed design and development testing process could result in the services discovering late that the vehicles are still not mature.

In a related effort, the Army is modernizing portions of its Up-Armored Humvees [High Mobility Multipurpose Wheeled Vehicle] to improve blast protection and extend its service life by 15 years, among other requirements.

Third, the Army has moved away from its plan for a single network program and is now using an incremental approach where it builds on capabilities already in place and is getting soldier feedback, as you mentioned, White Sands and Fort Bliss. This is a positive development. However, to avoid potentially wasting resources by developing a number of stovepipe capabilities that may not work together, it is important for the Army to define requirements for the network.

One network program that has been in development for over a decade was recently terminated, and you referred to the Ground Mobile Radio Program, and it was expected to be a key component of the network. The Army still has a need for software defined radios, and they expect industry to provide capability to meet some of this need through a competitive market but has not yet defined an acquisition strategy.

Finally, as we have discussed, there is still much to be determined on GCV, JLTV, and the network. For example, what is the best option for Ground Combat Vehicles? Is it a new vehicle or modification to a current one? Can the services afford both the JLTV and the Humvee Recap effort?

The Army has gotten positive results from its capability portfolio reviews, and, as General Lennox mentioned, they are able to look beyond the individual program to identify overlaps and set priorities. On both JLTV and GCVs, as the requirements have been examined more closely, the Army is finding that it can live with less in terms of capabilities, and has been able to reduce costs. It is important that these reviews continue in the future and that the Army considers a broad range of alternatives.

Thank you, Mr. Chairman. This concludes my short statement. I will be happy to answer questions from you or members of the subcommittee.

[The prepared statement of Ms. Martin can be found in the Appendix on page 50.]

Mr. BARTLETT. Thank you all very much for your testimony. As is my usual practice I will reserve my questions until last, hoping they will have been asked. So I now turn to my ranking member, Mr. Reyes.

Mr. REYES. Thank you, Mr. Chairman. Let me start with the Ground Combat Vehicle, which is the Army's number one priority, vehicle development program.

And now we know that in an unusual move, the Army has awarded two contracts to begin design work on the vehicle. But we are also told it is also evaluating current off-the-shelf options, including a modified M2 Bradley and an Israeli-designed personnel carrier.

So three questions that I have. What is the expected cost of these off-the-shelf vehicle evaluations? When will the Army have results that it can share with the committee? And third, did the Army want to do these evaluations or were they forced on the Army by OSD acquisition officials?

General LENNOX. Congressman Reyes, if I could take one or two of those parts, and then ask General Phillips to help on the costing information.

We in conjunction with OSD came up with this strategy and I think it is a very good one. As you know, the Ground Combat Vehicle is the vehicle that carries our infantry soldiers, the ones closest to combat. It is going to be the one that has to provide the requisite protection, and we have learned over the last 10 years that protection—every vehicle we make, we end up adding more to it to increase protection for soldiers. And this will be the first vehicle that will be built from the ground up to do that protection.

We think we have a very good path that looks at both developmental systems and non-developmental systems over the next 2 years, approximately 2 years. And I think by this time next year, we ought to have a good idea of looking at alternatives and costing them to see what path might be the best and, at the same time we are doing that, looking at developmental systems and non-developmental systems, we are going to be looking at requirements.

As Ms. Martin said, do we have them right, are they affordable, how much extra power or how much protection is enough, and all of these things come with costs, so do we have this right or not. And we will be reviewing that and we think we have a very good approach for getting that protection that we need for our soldiers.

General PHILLIPS. Sir, I would add a couple of things. Through all the costing that Ms. Martin actually defined very well, that we went through on GCV, we found out that we think we could bring this vehicle in for about 9–10.5 million and that is actually what was inside the RFP [request for proposal] and what we are holding the two industry partners to the standard. We don't yet know what the non-developmental items will cost yet. That's why we are going to go out and take a more deeper look at the vehicles that you just described, the stretch Bradley and others, and potentially a Stryker that we will take out to the desert.

Most importantly, we will take those vehicles out to White Sands, and we will be able to put them in the hands of soldiers and let them crawl around on them, use them in an operationally relevant environment so we can learn as much from them as possible.

Sir, I will make one other statement. We were not forced to do this in any way. It was a full partnership with OSD and the Army to go down this path.

And one other statement, sir, real quick. GCV is incredibly important to the Army. After 10 years of war, we know that we need an advanced infantry fighting vehicle to better protect our soldiers, and this will be the first vehicle built from the ground up to operate in an IED environment. When we look at attrition of vehicles down range, the Bradley is the second-most attrited vehicle. Now, we haven't had them in combat since I believe 2007, 2008. So early up in the conflict, they were getting attrited because of combat losses. We need a vehicle that can withstand the rigor of combat full spectrum. GCV we think is that vehicle.

Mr. REYES. So again, building one from the ground up and also testing, for instance, the Israeli vehicle and also the stretch Bradley, as it is commonly called, moving on parallel paths, at what point do you think that we are going to be able to make a decision? Is that within the next 12 months?

General PHILLIPS. Sir, probably in about the next 18 months. It will be 24 months to Milestone B, through the technology development phase. So in about 18 months, we will have better informed ourselves of the requirements, what type of NDI [non-developmental item] solutions might be out there. And that might inform us is there another vehicle out there with an NDI-like solution that we could use. So, sir, in about 18 to 24 months, we will be able to come back to the committee and let you know where we stand on that piece, sir.

Mr. REYES. Are there any concerns or reservations budgetwise in being able to keep this on track? I know it is Army's number one priority, but all of us are very much concerned as to what comes out of this in the next 30 days or so.

General PHILLIPS. Sir, I will let General Lennox jump on this. But GCV is fully funded throughout—beyond the budget years and through the POM [program objective memorandum] years as well, so we are fully confident that we can execute the strategy, the acquisition strategy, and that we will work with our partners to able to make sure that it remains affordable.

What is critical getting to Milestone B is that we want the best information possible as we execute Milestone B in 24 months. So we might refine the requirements and do more cost-informed trades as we go down the path. That is why the NDI solutions and taking the vehicles out and putting them out in the desert and putting them in the hands of soldiers will inform us better to make those potential trades.

General LENNOX. Sir, you asked if we are worried about funding and the answer is yes. Clearly we don't know the future for 2012 and out. We have prioritized this in the Army's funding, as you mentioned, but there is a lot of unknowns ahead for all of us, I think.

Mr. REYES. Thank you.

I will reserve my other questions for later, Mr. Chairman. I yield back.

Mr. BARTLETT. Thank you. Mr. Runyan.

Mr. RUNYAN. Thank you, Mr. Chairman, and thank you all for your testimony.

You kind of answered in a roundabout way my first question about there not being procurement in fiscal year 2012 for the

Humvee, but as you talk about up-armorizing these vehicles, what is the life expectancy of the vehicle and are you actually wearing on it more by up-armorizing it?

General LENNOX. I think you have hit upon an important trade-off for us. We are doing three things with our Light Tactical Vehicles. We are doing a recap today of the existing vehicles that are coming out of combat, and we are worried about the weight of those vehicles carrying armor. They are at about their capacity. So that is a big concern.

The second thing we are doing is we are looking at potential of what you can do with this fleet of 150,000 Humvees we have today in a program we call the MECV, and I hate to confuse everybody with acronyms. It is the Modernized Expanded Capability Vehicle, and we are experimenting over the next couple of years to see if there is something you can do with this platform that could bring new life to this vehicle. So that is a second thing that we are doing.

And the third is we are looking at the Joint Light Tactical Vehicle, and we just recently worked very, very hard with the Marine Corps to come to reasonable, affordable requirements of this vehicle. And our strategy is to do that side by side with the MECV, the JLTV and the MECV, in about 2 to 3 years, after looking at what industry can do, make a decision about the way forward informed by what industry can provide us.

Mr. RUNYAN. So in that decision process, are you—is your readiness at a disadvantage there? Are you going to have an influx of MRAPs or whatever in there also?

General LENNOX. In the interim, sir, you are exactly right. We will be leveraging the MRAPs and the MRAP ATVs. We have about 25,000 of those, compared to 150,000 Light Tactical Vehicles. So it is not enough with MRAPs and MRAP ATVs but it is a sufficient mitigator for soldiers in combat today. That is what we are using in combat.

Mr. RUNYAN. Next question I had was more—obviously, the Abrams is going to be in service for, what, another 34 years, and we kind of fell short on updating that in its full efficiency. How do you guys look forward to actually making that feasible because the numbers I am looking at, it saves about a billion and a half in efficiencies over the lifespan.

General LENNOX. Congressman, I think that is a big concern. How do you modernize all of your combat vehicles while you are trying to transform and get a new combat vehicle, the Ground Combat Vehicle? How do you improve the ones you have to keep them relevant? And then we have another grouping in there that simply have to be replaced, our M113s.

So what we have tried to do is prioritize, and because the Abrams is still the most capable main battle tank in the world, we have prioritized that lower than some of the other things. And what we approach it with is to do an engineering change proposal and get at some of the space, weight, and power issues now, and then look for a longer-term improvement that gets at some of the concerns that you raise—energy usage, better capabilities for the future.

Mr. RUNYAN. Thank you very much, Mr. Chairman. I yield back.

Mr. BARTLETT. Thank you very much. Mr. Kissell.

Mr. KISSELL. Thank you, Mr. Chairman. I welcome our panel that is here today for a very important conversation.

And I want to follow up a little bit, kind of in the same neighborhood, and maybe rephrasing the question a little bit about how we evaluate our needs. And we know that we have lots of equipment left over that we are currently using that will be left over. We know that we are engaged in active combat in Afghanistan, pulling out of Iraq.

How much do you feel constrained to base your decisions upon the equipment we have now versus what you think we might need as we anticipate where the next challenge may be? Are we making decisions based upon what we have and kind of thinking maybe the next situation will be similar? Or would we really rather break with what we have and go to new systems and trying to figure out how to do that? I know that is somewhat a complicated question, and I just wonder what your thoughts are towards how you see this conflict.

General LENNOX. You have hit the nail on the head in terms of the challenges that we face when you do modernization. And one of the officers that works for me said it better than anybody else. We have kind of an unknown future. We don't know what the threats will be that the Nation faces, but you have to be ready for those both today and tomorrow. He likens it to driving down a steep cliff in the dark and you can only see out as far as your headlights. And I think that is a good analogy.

So we try to do incremental modernization so that you make sure that what you have today is capable of fighting today, and you make the incremental improvements that you can. But in several cases, we are trying for transformation in our technologies. An example is the network, our number one priority, to get that down to the soldier and empower a soldier today with digital information, with data, with voice capabilities. We think that will be a transformation.

And additionally, the Ground Combat Vehicle. We think that vehicle where we have the most soldiers right in the middle of facing combat, we think we need to transform that capability as well.

So those are really our capabilities that are focusing on transformation. And by and large, the rest of them are focusing on incremental improvements in this period of unknown threat in the future.

Did that answer your question, sir?

Mr. KISSELL. Yes, because obviously there is not a right or wrong answer here. It is more of where our thoughts are going and how we look at balancing this out. And I was just looking for insight to that. And I thank you for that.

Someone mentioned to me—and I welcome anybody answering this. Someone mentioned to me that we are cutting back on our R&D, that there is so many more ideas we have out there that could be useful, but we are cutting back on them because we feel constrained, and maybe in part to keep using what we have had. Maybe we don't want to put more resources over to R&D. But it was said to me in a way that concerned me, because R&D is the lifeblood of—someone mentioned we have got to learn to live with less. Well, that living part is what it is all about, because that is

our soldiers. And we have got to have them living with less but we can't—we have got to make sure we are giving them what we need.

So do you have any concerns, any of you guys, in terms of R&D; are we cutting back too much, are we missing some things that we could utilize by not pursuing R&D.

General PHILLIPS. Congressman, I will start and ask General Lennox to weigh in.

Up front, we are concerned about the budget and how the budget will work its way through, and what that will mean for R&D; because as you said, most importantly, work on the projects that we want to make sure that we maintain a world-class Army and our soldiers with the best equipment in the world, which is what they have today. And we can't stop investing into their future.

It also has a tremendous impact on small businesses, and I meet quite often with small businesses. And the first thing they bring up is, what is going to happen with the R&D budget and with SBIR [Small Business Innovation Research] programs and others that are so critical to the innovative research that is ongoing in small businesses today? So as we look at the budget it certainly becomes a balance as was just described, a balance in how much you have in R&D and how much you have in the rest of the program to be able to push Army modernization forward. We have to sustain that balance. But we must continue to invest at a certain level with our R&D programs.

Mr. KISSELL. I know my time is running out but it is so important that—you know, if you look at so many of our systems now, like the UAVs; at one point in time that was R&D, and look what it means to us now.

Mr. Chairman, I yield back. Thank you, gentlemen and ladies, once again.

Mr. BARTLETT. Thank you. Now, Mr. Fleming.

Dr. FLEMING. Thank you, Mr. Chairman.

Contained in my district is Fort Polk, excellent Army base, has the Infantry Brigade Combat Team, 4th Brigade of the 10th Mountain Division. Though I served in the Navy, I am told by my Army friends, my Marine friends, that your most important tool is your rifle. For me in the Navy, it was chow. But for my Army and Marine friends, they say it is your rifle. So I want to ask about that.

Can you elaborate on the Army's strategy for procuring a new carbine and for improving the current one? I understand there is a dual strategy going on with that. Are these strategies affordable and do you have adequate funding available in fiscal year 2011 and projected in fiscal year 2012? Will this satisfy the requirements of USASOC [United States Army Special Operations Command], and if not, can you outline their modernization strategy for procuring the new carbine?

General PHILLIPS. Congressman, I will take the question.

As you said, we do have a dual strategy to upgrade the M4 carbine. And I will say up front, the M4 carbine is a remarkable weapon. The experience that we have in combat operations, we continue to measure that. The requirement for the M4 is to have 600 mean rounds between systems abort. And we are currently experiencing about 3,500. So it is more than five times greater than the current



requirement. So the current carbine our soldiers are carrying down range is very good.

But we will continue to upgrade that carbine. We are going through a series of upgrades. We have already done over 60, and through full and open competition we are going to provide additional upgrades for the carbine to enhance it in terms of ambidextrous trigger and also a heavier barrel to give it more capability to continue to improve.

And by the way, we are converting them from M4s to M4A1s.

Now the other piece of the strategy is we are going to go out and look and see if there is an individual carbine that is better than the M4 is today or the M4A1. So we issued an RFP and put that on the street. We had an Industry Day back 30 March, issued the RFP on 29 June. It closes tomorrow. So we will get feedback from industry and they will let us know what carbine that they might be producing in the commercial world potentially that might fit the bill for a new carbine inside the Army. And we are going through various phases to be able to determine whether or not industry has a better carbine than the current M4A1 is today. And at the end of that process, we will do a business case analysis to make sure that we are getting it right, because again, our soldiers trust us that we are going to give them the best equipment that we can.

Dr. FLEMING. Thank you for that answer.

Also, I understand that the JTRS Ground Mobile Radio Program has been canceled. Why? And what is the Army doing.

General PHILLIPS. Sir, great question.

The Ground Mobile Radio went through a rigorous comprehensive review between the Army and Office of the Secretary of Defense that took about 60 days of intensive review of the program itself. Up front I will state that the GMR program itself is critical to the Army's network strategy. We must have a GMR radio that will run the wideband networking waveform and the soldier radio waveform. Absolutely critical.

So when we say "termination," I will use these words. It is a graceful termination. The current contract is with Boeing. We are going to let that contract expire in March of 2012, and it will terminate on its own. We are not going to renew the contract. But the investments that the government has made in GMR, which is significant, and what industry has also made, we know through market research that there is a number of industry partners out there that can deliver the hardware to run those two waveforms that I just mentioned.

So part of our strategy is working with industry, leveraging our investment, and we will soon put an RFP on the street to ask for the hardware from industry, Ground Mobile Radio to run those two waveforms, and that will happen probably next month.

And sir, at the end of the day, this is positive for us. We will get this radio quicker. It will be at a lower cost than what the formal program would have delivered, and we will get it in what we call capability set 13 and 14, so 8 brigades that will deploy into combat operations will have a GMR radio running those two waveforms. And we will test that out at the Network Integration Exercise at White Sands as well.

So what we will do is put it in the hands of soldiers. And when you put something in the hands of soldiers and you let them run around with the equipment and use it, you get remarkable feedback from our soldiers as to how well that hardware will perform. We are excited about the strategy for GMR, sir.

Dr. FLEMING. Is that to say that the current Ground Radio System we have is only one waveform?

General PHILLIPS. No, sir. It was designed to run numerous waveforms. The original program was a four-channel radio. We will go in with a requirement for at least a two-channel radio, and industry will come back with their solutions. And we think we will get a much lower cost and capable radio that will deliver those two waveforms. And also we are working with legacy waveforms as well. They will be available at some point to run on a GMR radio as well.

Sir, I hope that answers your question.

Dr. FLEMING. Yes, it does. Thank you, and I yield back.

Mr. BARTLETT. Thank you. Mr. Critz.

Mr. CRITZ. Thank you, Mr. Chairman.

Thank you for being here today to testify before us. Going back to a couple of questions that Mr. Runyan had asked, one regarding the Abrams that is going to be in service I expect through 2045, talking about the commercial advances in engine compressors result in significant fuel savings. Now, I know that you weren't successful in getting the reprogramming to initiate this program. But I am curious. You know, this is one of the—fuel savings efficiency, extending the life maintenance, is an issue that is important to me, along with—when you talk about fuel savings, the APU [auxiliary power unit]. I ask about this, I think, every time that we meet.

So I am curious about how the Army is going to fund this effort to accelerate this critical cost-effective upgrade, and I am looking back at the 2008 NDAA [National Defense Authorization Act]: Establish an Army product improvement program to implement reliability improvements. And I was wondering if the Army is going to use this authority to address these issues.

General LENNOX. Sir, we didn't think that it fit in this case. The requirements are that you have to have payback within a year. We think in order to do this, this is going to take a considerable effort. It may take 4 or 5 years of research and development in order to get this capability. So what we have done is deferred it, frankly.

Mr. CRITZ. Okay. Another issue that came up as you were talking about the MECV and the JLTV concurrent development. Now, I think it was just this week that General Odierno believes that the renewed JLTV efforts are actually going to produce a vehicle that is more capable, better, and almost as inexpensive as recapping a Humvee. Now, would you agree that the JLTV procurement over the Humvee recap is still the best value for the government? Why, or why not?

General LENNOX. Sir, I think we have a good strategy.

Mr. CRITZ. You are talking 2 to 3 years, right?

General LENNOX. Yes, sir. To look at it in that time period to make sure we have got it right, test those things, test to see if they can protect soldiers, what kind of weight can they carry, and see what industry can do.

General PHILLIPS. Congressman, if I can add one comment. We have learned a lot through the acquisition processes and lessons learned from some of the challenges that we have had in the past. So what you see with JLTV today and what we have also described with GCV and with Paladin and with the M4 carbine, we have brought the requirements and the resourcing and the acquisition communities together to really drive after what requirements are driving costs, what is necessary, what is absolutely essential, and if it is not essential and it is a high driver of cost, then we need to eliminate that requirement.

That is exactly what we did with the Marines. When we pulled the Marines inside the process that we used for GCV, it was really overwhelming and powerful in terms of how we got to the requirements for JLTV today. So I would just add that we are very excited about what we can do with JLTV.

Mr. CRITZ. Okay. Quick question about the AMPV [Armored Multi-Purpose Vehicle] program. Now it was 2007 when the M113 was terminated. I know the fiscal year 2012 budget includes \$31.4 million to start an M113 replacement program with LRIP [low rate initial production] not happening until fiscal year 2016.

Now, looking back at how the Stryker vehicle was handled was that 1999 chief of staff announced his intent to acquire 2000, an award is made, 2002 it is in production, or in service, actually.

So is the Stryker model going to be used for the AMPV program as to how we move this very quickly? Because certainly in these trying budgetary times it would be most prudent, I believe.

General LENNOX. We are trying to figure out who can take this one. I want to move it much faster, so I agree with you, Congressman. I think this is a critical capability. We have soldiers in combat today that are operating on vehicles. Then we are going to ask them to come home and they are going to go to their motor pools and they are going to see 113s and they are going to change the oil on them, and they know they are not going to take these things to combat. So we have got to figure out a way to move faster on it.

The funding in 2012 is critical to that, frankly. We don't currently have it designed on the pace and speed of Stryker. There is a question of affordability, whether or not we can do that, but frankly we have got to figure out a way of how to do that faster.

General PHILLIPS. Sir, we would certainly look at applying the Stryker model and maybe doing it faster than Stryker did. Stryker, I worked it from 4 years inside the building. And in less than 4 years, 3/2 [Stryker Brigade Combat Team] out of Fort Lewis deployed into combat, in less than 4 years from the moment General Shinseki stepped on stage and said we are going to do this. Really remarkable. And Army acquisition did that. Light Utility Helicopter followed the model of Stryker. So we can learn a lot from our successes in the past as well. We would certainly look to use that opportunity.

Mr. CRITZ. Thank you.

Mr. Chairman, I do have one more question on CROWS [Common Remotely Operated Weapon Station], but I will wait for a second round so others can get their questions in. I yield back.

Mr. BARTLETT. Mrs. Hartzler.

Mrs. HARTZLER. Thank you, Mr. Chairman.

I want to cover some questions with force structure and the soldier weight unit and the Stryker if we have time.

But with regard to force structure, and in terms of equipping the force, what I would like to understand is the relationship between the current requirement of 45 Active-Duty brigade combat teams [BCT] and the cut to end strength of 27,000 soldiers between 2015 and 2016. So how do you plan and program and budget for equipment, with a pending end strength cut of 27,000 soldiers when it is conditions-based, and are there plans to reduce the current requirement of 45 Active-Duty BCTs and/or exchange for a current mix of heavy infantry or Stryker brigades?

General LENNOX. A short answer ma'am, yes, to all those things. A challenge for us when you program for your equipment for the future, and we are reducing in the last budget submission 27,000 soldiers, we thought we had a pretty good eye on what the end strength would be and the mix would be. And obviously now with the change in the budget circumstances, we are going through a process that says here is the national military strategy, here needs to be the Army's strategy, here is the force structure that supports that strategy, and here is how we equip it. What is the mix of heavy, medium and light? That work is going on right now, and it is a moving target today. So I don't have a definitive answer for you, ma'am. It has made our job a little bit tougher.

Mrs. HARTZLER. I know it is a challenge and I empathize with you and I wish it weren't so. I appreciate what you are doing there.

As far as the soldier weight unit or weight-load capacity and some of those issues, I know we had a hearing earlier in one of my subcommittees on that, and I know there has been efforts to try to reduce the weight reduction that our soldiers carry. And from what some articles have said, there are 20,000 soldiers right now, non-deployable status due to muscle or bone injuries that can be attributed to carrying heavy rucksacks over rough terrain and often high altitudes over 15 months' deployment.

So what improvements have been made in this issue to reduce the loads since 2009? Where are we at on those initiatives?

General PHILLIPS. Congresswoman, that is a great question. General Lennox and I were just at a forward operating base not far from the Pakistan border around Jalalabad, and we saw soldiers that were on patrol that were walking around carrying significant weight. We will never do enough to lighten the weight of a soldier, but we put an incredible amount of R&D and emphasis in it, everything from body armor to small arms to ounces, taking off thermal weapons sights, and I will give you just a couple of examples and ask General Lennox to join me.

Like the heavy machine gun, the M42 going to a lighter machine gun, it saves about 36 pounds, and the tripod using titanium and other alloy is obviously a little more expensive but that saves about 16 pounds. If you add that up, it accounts to about 50 to 55 pounds of weight saved off two soldiers carrying that in combat operations. Thermal weapon sights that save a pound or ounces. The enhanced combat helmet will save a few ounces, 3 or 4 ounces itself. If we can give them a better round that is more effective and they don't

have to carry as many rounds in combat operations, then that saves weight as well.

Body armor. In Afghanistan they use the Soldier Plate Carrier System. That saves on the average about 10 pounds from soldiers when they have the authority to use the Plate Carrier System.

Mountain boots. We were just there and we saw soldiers with boots, so we have a better mountain boot headed to Afghanistan today that is going to save about a pound each. And it is going to actually wick moisture away and operate better in a high, hot, mountainous environment. And there are lightweight mortars and other systems that we are working on as well, ma'am. We have to do more, though.

General LENNOX. It is funny, ma'am. We have done all of these things and when you go out and visit the soldiers like we did, you find they are still carrying 100 to 130 pounds of gear. So you take a little bit off and they will add something on. Extra water, extra ammunition. So it is going to be a constant challenge for us. We have requested about \$80 million in 2012 to look at further technologies and efforts to get after those kind of things and continue the effort.

Mrs. HARTZLER. We have a business in my district that is doing some research on body armor, and the weight significantly is less than what is currently out there. So I know there is a lot of effort being made to try to do that. But it is still shocking that you are carrying around 8-, 10-, 12-hour days, whatever, that much weight.

General PHILLIPS. Ma'am, we would be glad to hear from your industry partners and their ideas.

Mrs. HARTZLER. Sure. I guess we are done. Thank you very much, Mr. Chairman.

Mr. BARTLETT. Thank you. Ms. Tsongas.

Ms. TSONGAS. Thank you, Mr. Chairman, and thank you all for your testimony. I know you are wrestling with some really tough choices and I appreciate your great commitment to our country.

I had wanted to ask a question around the area of unmanned systems. So given the successes we have seen I think in protecting our men and women in uniform from IEDs and other threats, I am concerned that the Army isn't fully invested in the deployment of unmanned, future unmanned ground vehicle systems to further support our troops. So I am just wondering, is that the case? Is there a strategy in place? What do you see coming?

General LENNOX. Yes, ma'am. We had a program that was producing a very large unmanned vehicle with autonomous navigation system. It was very complex and expensive, and we did stop that program.

We have sent to Afghanistan a variety of other programs that have smaller vehicles, to try to get at understanding how the soldiers would actually use those vehicles in combat. Are they good replacements for trucks and to take some of the load off off of the soldiers' backs or not. So we have some experiments going in theater. We are hoping to learn from that and inform us for the future in that regard.

Ms. TSONGAS. So it is not necessarily a coherent strategy? It is just sort of trying something, trying something else, evolving with it?

General LENNOX. I think we found what we were doing was producing something that was not cost-effective, was very expensive, and didn't produce the results we wanted. So really what we are doing is seeing what soldiers want and what will work as a way of informing us for the future.

Ms. TSONGAS. I imagine there is some smaller—ways to deal with this on a much smaller scale as well. I certainly have companies in my district, in the robotics area, that are constantly sort of coming at this in very different ways.

General PHILLIPS. Ma'am, could I take that on for a second? I would encourage the companies that you have within your district or anywhere in the U.S. that are interested in this. We are doing some remarkable work at the Network Integration Evaluation out at White Sands and Fort Bliss, and we are asking industry and partnering with industry to come and show us what their great ideas are, based upon gaps that we have in the Army. And General Lennox just described one of our gaps.

If there are companies that are interested in that, we periodically will do this every 6 months, and will issue a RFI, request for information, that will go out and is published on the Federal Web pages. If companies have an interest in solving one of those gaps, we certainly want them to come forward. And those companies that you just described might be critical to us identifying the right capability to meet a gap.

And what is important about White Sands is we can test it in an operationally relevant environment before we take it down range and then try to solve the problem with soldiers that are in combat and performing combat operations. We can do that at White Sands. So we want their feedback.

Ms. TSONGAS. You raised an interesting issue. This past week we had a district work period, and I have a lot—Massachusetts is home to many, also clean energy companies, we have a robotics cluster, we have a lot of clean energy companies. And many of them were looking for ways to work with the Defense Department. And we actually put together a session in the morning in which representatives came to talk to these companies. They are not in the SBIR community, they are not as familiar with the processes. They are highly, highly innovative, and see a real opportunity to work with the Defense Department to solve some problems. So I can see where there are many ways in which this is also in the robotics community as well.

But it raises another issue, and that is I am going to channel Congresswoman Giffords for a minute, and we do wish she were here. But as you talk about modernization, how do you think about energy consumption and how do you factor that into your efforts going forward?

General LENNOX. An important aspect, ma'am, an important aspect in how we determine our requirements. We do look at energy and energy consumption. And it is a factor as we look at new purchases. So, for example, on the Ground Combat Vehicle, one of our requirements is it needs to be more fuel-efficient-per-pound a vehicle than its predecessor is. That doesn't mean, unfortunately, it will be more fuel efficient overall, but we will get a better aspect. And we are open to different kinds of technologies, I don't know if I can

talk about those technologies, but different kinds of technologies that may come with a program as a solution to that problem.

General PHILLIPS. And, ma'am, we are ratcheting up our emphasis on energy and energy efficiency. The JLTV has a requirement similar to what General Lennox just described as well. And we learned a lot from the technical development phase which will all translate into the JLTV strategy that we are pushing forward.

TRADOC, our TRADOC, Training and Doctorate Command, continues to work on capability documents to address energy efficiencies as well. And I think this will be an occurrence at the NIE [Network Integration Evaluation], but we will ask for companies to come forward and share with us their great ideas on energy efficiency, it might be generators, it might be something else, but to help us become more energy efficient. We are taking that on and we are very serious about it as well.

Ms. TSONGAS. I am glad to hear it. I can only see good things coming with that. As you wrestle with the high cost of energy, you have to look at ways to both conserve energy or use alternative fuels, and the more you are able to work with the private sector, and these very innovative thinkers out there, I can only see good things coming. So I encourage you to continue down that path. Thank you.

I yield back.

Mr. BARTLETT. Thank you.

Mr. LoBiondo.

Mr. LOBIONDO. Thank you, Mr. Chairman. Thank you, Generals, for being here today.

Can you talk a little bit or share what is the strategy or plan to provide the Army with a modern Armed Aerial Scout aircraft to replace the old OH-58?

General PHILLIPS. Congressman, thanks. We are currently looking for a fly-off over the next year, various commercial-off-the-shelf, very limited adaptation platforms, that could help us meet this requirement. It will be a challenge for us with costing within our top line of the future. That will be a big factor.

The capabilities of that aircraft, as you know, I think you know better than anybody, our aircraft are being flown significantly. The CH-47 Fxotrots are being flown significantly. The Kiowa Warriors are being flown significantly in theater. We have to find a replacement for the Kiowa Warriors over time, it is an old platform. And this fly-off is a little bit like the Stryker approach that we talked about earlier, to try to see what candidates are out there.

Mr. LOBIONDO. Thank you. Also, what is the Army strategy going forward for the Enhanced Medium Altitude Reconnaissance and Surveillance System [EMARSS]?

General LENNOX. Under review right now, sir. I have said in the press and probably spoke out of hand in the last couple weeks, but we are looking seriously at a lot of these capabilities. Can they be done in the Army? Should they be done in the Air Force? How many of these platforms should be purchased over time, and is the capability that is in theater doing that mission today something that can be replicated very quickly if you need it in the future?

So this aircraft, fixed-wing aircraft for example today, has some SIGINT [signals intelligence] capabilities in the back of it. Can that

be replicated if you don't have a big investment today? Can you rapidly replicate it in the future? These are all of the things we are considering now in the ultimate decision about the EMARSS aircraft.

Mr. LOBIONDO. Thank you, General.

Thank you, Mr. Chairman. I yield back.

Mr. BARTLETT. Thank you very much.

Mr. Wilson.

Mr. WILSON. Thank you, Mr. Chairman.

Ms. Martin, Generals, thank you all for being here today. As Mrs. Hartzler was asking you questions and the new boots weighing a pound less, I was thinking back to around 8 years ago when I retired after 31 years, and it is exciting to me and I want to thank you that we have multiple generations of improvements to uniforms and equipment from just the time that I served. And indeed I point out to people, and I mean this as a compliment to you, that my uniform would be more appropriate in a museum. So it is just exciting, what you do.

I want to put a bug in your ear, too, that in the district I represent, which includes the Savannah River Site, there is a great deal of research for modular nuclear reactors. And these to me are safe, secure, clean, but have extraordinary military application on facilities such as Fort Jackson or actually more remote. When I was at Kandahar, to see the size of Bagram-Balad; the size of facilities and the security that could be provided in a wonderful place that I greatly appreciate, the island Territory of Guam. So I hope that you all are looking into the advancing technology of modular nuclear reactors.

General Lennox, currently the Army is considering two program solicitations, one for a new individual carbine to replace the M4 and M16 and another for product improvements to the current platforms. In your judgment, does the Army have the funds to do both?

General LENNOX. Congressman Wilson, I think that is a good question. What we are trying to do now is see what improvements we can make to the current M4, the M4A1, and it is performing, the M4 itself is performing magnificently in combat today. The M4A1 we are continuing to improve. In the meantime, we think doing this carbine competition will inform us about what the best path is in the future.

Now, affordability is going to be a big issue, frankly. We have got about 500,000 M4s, and to start over from scratch will be a challenge for us and it will be influenced by what the budgetary environment looks like when we come to make this decision. I think in about 3 years is the time frame for this. So we are going to continue along this path. We are going to see what industry is capable of producing. We think there is a lot of exciting things being done out there, but affordability is going to be an important fact.

Mr. WILSON. Another factor. Is there any assurance that you can provide, the Army did not conceive the new carbine requirements without first examining already existing new weapons platforms such as the Special Operations Command carbine competition?

General PHILLIPS. Sir, I can confirm that. We looked through market research, what currently exists inside the Army, Special



Operations Command, and in industry we looked holistically before we proceeded with the program, sir.

Mr. WILSON. I have three sons serving in the Army, so I actually have a personal interest. Thank you again for what both of you all are doing.

Ms. Martin, as the Army approaches the launch of the technology development phase of the Ground Combat Vehicle, what do you see as the major areas of risk for this program to meet the performance expectations within a 7-year schedule?

Ms. MARTIN. Thank you, Representative Wilson. As I mentioned in the testimony, we have identified a number of questions. One, urgency of the need, cost and affordability, the robustness of the analysis of alternatives, and, again, the plausibility of delivering on that schedule. And in the technology, the development phase, as the generals have mentioned, there will be an opportunity to not only look at the vehicles that are being developed, but also look at non-developmental items as well as refining the requirements.

So to the extent that these activities take place during the technology development phase, that should position the Army to be in a better place in 18 months to 2 years to be able to make a decision as to whether a new vehicle is the right answer, or maybe modifications to a current vehicle.

Mr. WILSON. Thank you for that very thorough response. Thank you.

To both generals, as the Army prioritized components within the product improvement program, can you distinguish between sustainment and improvement?

General LENNOX. I think both those are important aspects of incremental modernization, Congressman. I think increasingly we are looking at sustainment costs—I don't know that we have always done that—and weighing that versus affordability in making the initial improvements.

So some of the earlier comments we made about the big savings you could make if you did something to the Abrams engine are absolutely true. The question is can you afford to do them or not. So we are weighing sustainment costs as an aspect of this as we make decisions.

Mr. WILSON. Again, thank you all for your service.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

Mr. Platts.

Mr. PLATTS. Thank you, Mr. Chairman. I will be very brief. Actually, Congressman Wilson touched on the M4 issue which is what I was going to focus on. I appreciate that update. We will be anxious to see what the results going forward are. My son and I shoot our M4s pretty regularly, and the fact it allows me to hit 200 yards out with open sights speaks to what a great weapon it is, because I don't have that great a shooting eyesight. But it certainly has a proven record, and I think the balance that you are taking of whether you can up-improve it, but also within budget constraints, is an important one in finding that right match going forward.

The final comment is a word of thanks. I know the assignment you both have been given, and your colleagues, of continuing to meet the needs of our Army in these budget times with the cuts

that are coming is a challenging one, and we are grateful for your leadership and your efforts in meeting that challenge. I appreciate your service.

With that, I yield back, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

As anticipated, most of the questions I thought needed to be asked have been asked. I have just a couple of questions. I have a brief question for the record.

On August 1, in response to a letter to the Secretary of the Army, we got the response, "The draft addendum does not include a KPP [Key Performance Parameter] against rocket-propelled grenades." However, General Odierno stated in testimony on 21 July of this year, and I quote, "The competitive Humvee Recap Program will incorporate scalable protection and plan for additional protection against rocket-propelled grenades."

It would seem to me to only make sense that the Army would provide similar or greater protection against RPGs [rocket propelled grenade] for the MECV Humvee Recap Program as is provided today for the MATV.

And my question is, and give me a one word answer today, and if you want to amplify, do that for the record: Can you confirm that the Army plans to include RPG protection as a requirement as part of the MECV Humvee Recap Program? A one word answer, and then amplify for the record if you wish.

General PHILLIPS. Sir, I will answer. The answer is yes.

Mr. BARTLETT. Thank you. And you can amplify for the record.

General PHILLIPS. Sir, we will amplify for the record. We learned so much from operations down range.

[The information referred to can be found in the Appendix on page 71.]

Mr. BARTLETT. Thank you so much.

I have a couple of questions for our witness from GAO. You mentioned the requirements for one of our developments was not achievable, and I have a question about requirements. We need to ask two questions about requirements that I am not sure we ask and adequately answer in our developments.

The first question is just that question: Is the requirement achievable? And the second question is maybe an even more important question: After you decide that yes, it is achievable, then we need to know, do we really need to do all that? Maybe getting 95 percent of the way there for half the cost will be quite adequate. At some point my farmer friend would say, I am not sure the juice is worth the squeezing. Do you think that we have an adequate procedure for addressing these two questions in our development programs?

Ms. MARTIN. Thank you, Chairman. Yes, I think within the acquisition process there is ample opportunity to develop and refine requirements, and I think all three of us have talked about that process a bit today.

We sometimes start out with requirements that may be nice to have, but as we go through the technology development and other phases of the acquisition process, there are ample opportunities to refine those requirements because we match them with costs, with schedules, and determine affordability.

Certainly we saw with the JLTV program that some of the original projected requirements, when they went into tech development, were not achievable. To get the protection that they needed, you would not be able to be able to still transport the vehicle because it would weigh too much. So there were some trades there. So, again, the acquisition process does allow for trades in requirements.

General Lennox talked about the portfolio reviews. That is another opportunity to really look at capabilities, look at programs across a spectrum, and kind of determine there what do we really need with respect to capabilities, what can we live without? And in doing that, you have the opportunity to drive down costs.

Mr. BARTLETT. Our procurement history I think indicates that we may not be aggressive enough in asking these questions and answering them, because it is only in very rare development cases that we do not have a program that runs too long and costs too much as compared to our original expectations.

So I would hope that we might have a more vigorous dialogue on these two things: First of all, is it attainable; and, secondly, do you really need that much at that cost? Answering these questions in today's environment is going to be even more important.

As the Army proceeds to implement its Network Investment Strategy, what advice would GAO offer the Army on how to proceed? What are the major areas of risk for the Army to focus its management and attention on?

Ms. MARTIN. As I mentioned in my short statement, we think the evaluations that are taking place at Fort Bliss are a good step forward. They allow the Army to identify some baseline capabilities. There is an opportunity for incrementally building on the capabilities that are there. Obviously, getting input from the soldier is very important because they are the ones that are ultimately using this equipment.

A couple of independent test evaluators have talked about the importance of being able to gather kind of objective and measurable data, and I think that is something that hopefully the Army will do as they continue these evaluations. And we also mention the importance of having overall requirements for the network so that you fully understand how the various pieces fit together.

But, by and large, we certainly think that these evaluations are a positive step forward and can glean a lot of really useful information as the Army moves forward.

Mr. BARTLETT. Thank you. I have another comment or question or two, but we will do that at the end of a second round of questions.

My ranking member, Mr. Reyes.

Mr. REYES. Thank you, Mr. Chairman. I just have one other question. It is regarding the Joint Air-to-Ground Missile. Does the Army still have a requirement for this weapon?

General LENNOX. Yes, sir, we do.

Mr. REYES. While the program has been delayed, are you aware of any technical problems or major requirement changes that might lead to a potential decision to terminate it?

General LENNOX. Congressman Reyes, what we are struggling with now is we have a number of the highest priority programs

that we want to fund, and then there is another tier that we have to ask ourselves can you afford these in the future. JAGM as a program has been very effective and is working without problems, but it will ultimately be a question of affordability. No decisions have been made yet, but that will be one of the programs we are going to have to ask ourselves, do you continue with Hellfire, which is doing well in combat today, or do you go to the next generation? Kind of getting at some of the conversations we have had earlier is incremental improvement—or should we go to the next generation, and can you afford to do that? And that will be something we will be wrestling with.

Mr. REYES. Thank you, Mr. Chairman. That is all I have.

Mr. BARTLETT. Mr. Critz.

Mr. CRITZ. Thank you, Mr. Chairman.

In talking about the Commonly Remote Operative Weapons Station, the CROWS system, I have three questions that revolve around the CROWS, and mainly because I am a little baffled.

In the first performance specs on both the Humvee Recap and the JLTV, they included a requirement for the CROWS. Subsequent updates to both performance specs removed the CROWS requirement. The alternative to having a CROWS system leaves a gunner exposed to snipers and IEDs. We know that. With the Army's commitment to the CROWS system as part of the Stryker and MRAP programs, why would this capability be removed from the Humvee Recap and the JLTV?

So I guess there are three questions: Is this system working? Two, why was it removed from the spec? And if we are dedicated to it in the Stryker and the MRAP, why aren't we keeping it on the Humvee Recap and the JLTV?

General PHILLIPS. Sir, CROWS is working well and in use, as you just described, in MRAPs and other vehicles in combat operations today.

Number two, the reason it was removed is because it will remain a part of the actual system, and whoever results from the winner of the MECV program, the Humvee Recap, will actually be charged to integrate the CROWS system inside the vehicle itself. So CROWS is actually a part of our program going forward, even though it might not be an integral part of the phase one, which is the RDT&E [research, development, test, and evaluation] that we want the companies interested in the MECV program to be interested or to come forward with. So it will be a part of the final solution for both JLTV and for the MECV.

Mr. CRITZ. Okay. All right. Thanks. And one quick question.

On the MECV program, General Phillips, you had said that—you sort of snickered when I asked about could we mirror the Stryker, but then you said maybe you could do it quicker. Is there anything—are you hinting or intimating there is something we could do on this committee to be helpful in that aspect?

General PHILLIPS. Sir, if there is something that we need your help with, we will certainly come forward and ask for your help and support.

If I can talk about the acquisition process just for one second, sometimes we hide behind the laws and the rules and the statutory and policy requirements. I think if we try to work within them bet-

ter and to better understand them, we might be able to accomplish the mission. And that is exactly what we did with Stryker, what we did with the Light Utility Helicopter, and it is what we are trying to do today with rapid acquisition and a more agile acquisition process, using White Sands and the NIE effort that we have ongoing.

So first we will work within the process itself and try to achieve efficiencies. Sir, if we need your help, we will come and ask you.

Mr. CRITZ. Thank you.

Thank you, Mr. Chairman. I yield back.

Mr. BARTLETT. Thank you very much.

At least to some extent, what you all are now doing and what we are doing here today in this hearing and the series of hearings that we are having in this committee, are exercises in futility, because there are two questions to which we do not have an answer and we really need an answer to these two questions before we can rationally and intelligently proceed.

One of those is what will be our future strategy. There is a considerable concern that we will not be able to use our military in the future the way we have used it in the past, and we have not really come to terms with that. We do not have a strategy. Until you have a strategy, you do not know what kind of military you will need.

Having decided that question, then the next question to which we do not have an answer is, how much money will we have? So I apologize for the uncertainties that we labor under. We do not know what our national strategy for the use of our military will be for coming years and we do not know how much money we will have to implement that strategy. So thank you for persevering and serving your country in these difficult times.

Thank you very much for your testimony. Do the members of the subcommittee have any additional questions or comments?

Okay. Thank you very much for being with us today.

[Whereupon, at 3:20 p.m., the subcommittee was adjourned.]



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**A P P E N D I X**

OCTOBER 26, 2011

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**PREPARED STATEMENTS SUBMITTED FOR THE RECORD**

OCTOBER 26, 2011

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**OPENING REMARKS OF HON. ROSCOE G. BARTLETT, CHAIRMAN,  
SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES  
HEARING ON  
ARMY ACQUISITION AND MODERNIZATION PROGRAMS  
October 26, 2011**

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Good afternoon. Thank you for joining us.

Today, the Tactical Air and Land Forces Subcommittee meets to receive an update on Army acquisition and modernization programs.

I would like to thank our witnesses for being here today. They are: Lieutenant General Robert Lennox, Deputy Chief of Staff of the Army, G-8, Lieutenant General William Phillips, Military Deputy to the Assistant Secretary of the Army (Acquisition, Logistics and Technology), and Ms. Belva Martin, Government Accountability Office, Director of Acquisition and Sourcing Team.

Since the subcommittee last received testimony from Army leaders there have been many programmatic changes to major Army programs. In addition, as I have stated before, major reductions in the federal budget need to be a major element of correcting the federal deficit. The Department of Defense must share in a fair and balanced way in those reductions. That process is already taking place under the Budget Control Act of 2011, with nearly \$500 billion in cuts planned for DOD over the next ten years. Further, cuts beyond the \$400 to 500 billion are possible, up to approximately \$1 trillion over ten

years, under what Secretary Panetta has called the “Doomsday mechanism” sequestration provision of the Budget Control Act.

It remains unclear how DOD would apportion funding reductions and how funding reductions will impact Army modernization programs.

The purpose of today’s hearing is to get an update from the witnesses as to what changes may have to be made in their proposed acquisition programs in fiscal year 2012. We would like to hear from our witnesses what their major issues and concerns are. What should our members be most aware of as the fiscal year 2012 request is finalized in Congress? Finally, we would like to know the views of our witnesses on what potential impacts to Army capabilities could occur, particularly in light of the possible reductions in the Army’s procurement and R&D budgets.

A couple of examples of our concerns are what we understand to be the Army’s top two modernization priorities: the Ground Combat Vehicle and the Network. The GCV program received Milestone A approval—entry into the Technology Development phase—in August 2011. Although the program is currently under a General Accountability Office protest, we do expect to learn more about the GCV acquisition strategy and requirements stemming from the most recent Office of the Secretary of Defense Acquisition Decision Memorandum. And for the Network, we would like to learn more about how the recent Network Integration Exercises at Fort Bliss and White Sands Missile Range are helping the Army make informed budget decisions. Most

recently, Congress was informed that the Ground Mobile Radio, part of the Joint Tactical Radio System and the Network, was terminated as a result of the Nunn-McCurdy process.

[Before we begin, I would also like to welcome the subcommittee's newest Member, Representative Kathy Hochul, from New York. Welcome to our subcommittee.]

I thank all of you for your service to our country and for being here. I look forward to your testimony.

And now to my good friend from Texas—the Ranking Member—Mr. Reyes.

**Statement of the Honorable Silvestre Reyes,  
Ranking Member, Subcommittee on Tactical Air and Land Forces  
Army Acquisition and Modernization Programs  
October 26, 2011**

Today's hearing on Army modernization comes at a critical juncture for the future of the US Army.

On the one hand, with the end of the war in Iraq the Army may finally have a chance to improve dwell time for troops and families and repair worn-out equipment.

At the same time, the war in Afghanistan continues and the Army still has to be prepared to deploy troops to Korea and other potential flash points.

And finally, laid on top of those demands, the Army is conducting a planned drawdown in the size of the Army from 567,000 active duty troops to 520,000.

Balancing those three factors will, no doubt, be difficult.

When one turns to the issue of modernizing the Army's equipment, I think it is important to remember what has been accomplished over the past 10 years.

- The Army has fielded hundreds of UAVs and other ISR platforms that give today's soldiers far more capability to find the enemy and understand his intentions.
- The Army has upgraded almost its entire vehicle fleet, from Abrams tanks, to trucks, to Strykers, to MRAPs.
- The Army now provides personal soldier equipment vastly improved over what troops were issued in 2001, including better body armor and personal weapons.

- The Army continues to invest in aviation capability, increasing both the quantity and quality of helicopters in the force.
- The Army is working hard to get more network communications equipment in the field, including the large scale “Network Integration Exercises” at Fort Bliss.

So while some programs didn’t work out as planned, a lot of very smart investments were made, and today’s Army is better equipped than ever before.

However, the Army must continue to modernize in critical areas to stay ahead of future threats.

I felt that the modernization plan presented by the Army at our hearing in April was a solid, integrated plan for moving the Army forward on its top priorities:

- pushing the network down to the soldiers,
- continuing to expand aviation capability, and
- investing in programs for the future.

However, since that hearing, Congress passed the Budget Control Act that will cut \$450 billion from DOD budgets over the next ten years. Additional cuts from the “super committee” are possible.

How the Army plans to deal with those reductions in FY12 is a major issue for today’s hearing.

While I’m confident the Army will do the best it can to adapt, I am concerned that disproportional cuts to modernization may do real damage to the future Army.

Too often, discussions about “what the Army needs” are focused exclusively on today’s fight, even though Army leaders have to also focus on being ready for the next conflict.

The Ground Combat Vehicle is an example.

With the Army planning only incremental upgrades to Abrams and Bradley fighting vehicles in the future, it is clear that the Army must start investing now in the vehicle it will need in the 2020s.

Despite the need, the GCV has already been delayed for months by contract delays and protests.

If it does not move forward soon, then the Army won't have any new combat vehicles in development.

The Joint Air-to-Ground Missile, or "JAGM", is another example.

While Hellfire missiles are doing a great job today, in the future the Army will need a more capable missile to defeat advanced countermeasures from longer ranges.

If JAGM is terminated, as some press reports have suggested, then the future Army won't have the best missiles available, and the nation might lose critical missile research and development capability.

Overall, I am concerned that the Army's investments in critical future capabilities could bear the brunt of reductions to the Army's budget.

I look forward to hearing about the future of those programs and others in today's hearing.



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

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

FIRST SESSION, 112<sup>TH</sup> CONGRESS

ON

ARMY ACQUISITION AND MODERNIZATION

October 26, 2011

NOT FOR PUBLICATION  
UNTIL RELEASED BY THE  
COMMITTEE ON ARMED SERVICES

Chairman Bartlett, Ranking Member Reyes, members of the Committee, thank you for the opportunity to testify on Army Acquisition and Modernization. We will provide the committee with an update of our Affordable Modernization Strategy process and changes in key programs since our last meeting in March 2011. On behalf of our Secretary, the Honorable John McHugh and our Chief of Staff, General Ray Odierno, I would like to take this opportunity to thank the members of this committee for your steadfast support and shared commitment in this endeavor to provide the more than one million men and women in our Army with world-class weapon systems and equipment to ensure mission success.

**Update since March Hearing**

In February of this year the Army submitted our President's Budget request of \$31.8B for Army Modernization programs. We very much appreciate this committee's support of our request. Since then there have been changes ranging from program changes due to having more and better information, to deficit reduction initiatives. We now know more about the status of some programs and have asked Congress to help us make changes. New technology has become available that could have significant payoff. Stryker Double V Hull is an example. In another instance, a development program matured faster than expected so we could bring key network on-the-move capabilities forward from within WIN-T to get the equipment to the Soldier faster, while reducing overall program cost and schedule. The most sweeping changes have been in response to the President's Debt Reduction initiative and the Budget Control Act of 2011.

**Meeting the Challenges - An Affordable Equipment Modernization Strategy**

The Army is meeting these challenges posed by changes to our programs using our Affordable Equipment Modernization Strategy. Our Army Equipment Modernization goal is to develop and field a versatile and affordable mix of equipment to allow Soldiers and units to succeed across the spectrum of conflict today and tomorrow and maintain our decisive advantage over any enemy we face. Our first priority is to win today's fight. We currently have approximately 70,000 Soldiers serving in Afghanistan and 50,000 Soldiers serving in Iraq. We must not forget them as they continue to serve in harm's way. Lessons Learned from the current fight have shown that we need to continue to improve protection for our Soldiers in both Soldier protective equipment and vehicles; we need a network down to the individual Soldier level for his situational awareness – essential to empowering our Soldier; and we need to lighten the Soldier's load when equipping him with improved protection, increased lethality, and improved situational awareness using the network, sensors and optics.

Our second priority is to prepare for the future. To do this, the Army is pursuing versatile materiel solutions which are adaptable – able to change in response to the situation (bolt on – bolt off armor); expandable – able to change over time as technology matures (Stryker systems); and networked – able to share information. In addition, the equipment must be affordable – providing the best value in line with senior leader priorities, within projected resources, and within acceptable risk parameters.

The strategy to meet this goal within current fiscal constraints is to balance requirements with resources and align acquisition programs with these approved requirements and resources. Our Affordable Modernization strategy to equip the force utilizes three tenets. The first tenet is to align the modernization community through Integrated Portfolios to ensure integration across the requirements, acquisition, and resourcing communities. This collaboration will balance current and future requirements with effective solutions within allocated resources to produce the best equipment available.

The second tenet of our Affordable Modernization strategy is Incremental Modernization, which will deliver improved capabilities as necessity clarifies them, technology matures, and resources become available. Our focus is on continual improvements to our enduring capabilities – Network, Soldier, Squad – preserving flexibility to make capability improvement decisions closer to need. The Army's night vision program is an ongoing example of procuring the latest technology for our deploying forces rather than trying to equip the entire force with devices which will be out of date in five years.

ARFORGEN Equipping is the third tenet in our Affordable Modernization strategy, which will improve or maintain core capabilities and provide mission-specific capabilities in support of operational employment cycles. This tailored equipping policy supports our incremental modernization programs while providing deploying forces with the best equipment available.

The Army is committed to improving its acquisition process. We are implementing sixty three separate Acquisition Reform recommendations in the Army Acquisition Review to address and avert the likely causes of cancelled acquisition programs. These efforts include greater collaboration between the acquisition, requirements and resourcing community in developing modernization programs, as well as instituting competition, innovative contracting strategies and a reliance on mature technologies in developing systems. These efforts complement the reforms under the Institutional Army Task Force to improve the materiel development and sustainment process, to manage and establish oversight of the service's acquisition and our efforts to diligently pursue and implement efficiencies and affordability through the DoD Better Buying Power initiatives.

#### **Army Priority Modernization Programs Update**

##### Network Portfolio

The Network provides a broadband capability to commanders on the move and to the Soldier. Multiple integrated programs provide the requisite portfolio capability.

Warfighter Information Network -Tactical (WIN-T) is a critical component of the network. It allows Army commanders and other joint network users, at all echelons, to exchange information internal and external to the theater. This network arms Soldiers and mission partners with the right information, in the right format, at the right time, and at the right place. It ensures network services (voice, data & video) across all formations down to Company headquarters. This provides the Warfighter with seamless, secure, mobile

communications, along with advanced network management tools. The program is an example of the Army incremental modernization strategy. The current Increment 2 system provides increased capabilities over those fielded and tested in combat with Increment 1. The most significant capability increase is network communications on the move; using mature, low risk technology, the Army has developed a system that is ready for fielding. We have asked for your support to accelerate the Aerial Tier, Joint C4ISR (JC4ISR) radio, and Integrated NETOPS capabilities. These components will provide the Warfighter with robust communications links and the ability to manage multiple networks from a single computer application.

Joint Tactical Radio System (JTRS) is a cutting edge radio system that provides secure, reliable, multi-channel communications using new waveforms for mobile military users. It enables tactical commanders to view and understand the battle space, communicate intent, lead forces, and disseminate real-time information. This networked communications capability at the tactical level supports information sharing and combat readiness between the services and the individual Soldier. JTRS puts the full power of the Global Information Grid into the hands of the Warfighter. Another important network initiative is System of Systems Engineering (SoSE). SoSE is on schedule and is running our new, semi-annual Network Integration Events at White Sands Missile Range, New Mexico which places new equipment in the hands of Soldiers to provide an assessment of system strengths and weaknesses.

Nett Warrior is a program which improves Warfighter situational awareness. In keeping with the Affordable Modernization Strategy, the Army reviewed the requirements, materiel solutions, and resources and identified some lower cost design options. At the same time, the position location information classification requirements were modified by OSD. The requirement and design changes, allowed us to adopt a commercial off-the-shelf design that changes the weight from 13 lbs to 3 lbs and utilizes the proven Rifleman Radio.

Combat Vehicle Portfolio. Our combat vehicle strategy will increase the capability of the Brigade Combat Teams by acquiring the Ground Combat Vehicle to provide our Soldiers going into the most lethal fights a fighting vehicle with the best protection, mobility, and upgradeable design to hedge against uncertain future threats. We will replace the aging M113 Family of Vehicles with a platform able to meet the demands of today's environment. We are upgrading the Abrams, Bradley and Stryker to improve protection, mobility and allow integration of the network so they remain relevant and capable.

Ground Combat Vehicle is the U.S. Army's program for a highly protected and mobile fighting vehicle for an Infantry squad. The Army is taking a game-changing approach to acquire the right vehicle. While we pursue new technology, the Army will concurrently test existing vehicles to find the best solutions that provide Soldiers the highest quality and most affordable vehicle. This will be the first fighting vehicle developed to operate in Improvised Explosive Device (IED) and current and future hybrid threat environments.

Its priority requirements are: Force Protection, Capacity (Nine-Soldier Squad plus crew), Full Spectrum capability (Modular Armor, Open Architecture, and Growth), and Schedule (seven years to first production vehicle).

Armored Multipurpose Vehicle (AMPV). This program is essential to replacing the aging M113 fleet which cannot operate off the Forward Operating Base in today's IED environment. The Army must conduct an Analysis of Alternatives which will be the analytical basis for refining requirements and selecting options for evaluating existing or Non-Developmental vehicles potentially suited to the different M113 mission roles.

Paladin Integrated Management (PIM). This is a program to make our indirect fire capability better so it can support a range of potential combat operations as an integral part of the combat maneuver force. This program provides significant upgrades to the automotive capabilities of the current Paladin Howitzer. With these upgrades, the Paladin will "keep up" with other combat vehicles in maneuver formations. Improving the existing weapon system is considered to be the most cost-effective method to significantly improve sustainability and survivability on the battlefield as well as meeting long-term readiness and modernization needs.

Tactical Wheeled Vehicle Portfolio. Our Tactical Wheeled Vehicle strategy emphasizes the importance of blending an affordable path forward to develop the Joint Light Tactical Vehicle (JLTV), to replace legacy platforms with systems capable of meeting current and projected threats in parallel with recapitalization of current vehicles so they remain



relevant and deployable.

Joint Light Tactical Vehicle is a joint Army-USMC program to develop a family of vehicles capable of performing multiple combat mission roles. The vehicle is designed to provide protected mobility for personnel and payloads across the full range of military operations. Two significant changes have occurred since last March. First, the Army and USMC have agreed on a common requirement for the basic vehicle. Secondly, the Technical Development phase demonstrated which capabilities are both mature and affordable allowing us to revise our Acquisition Strategy for the Engineering and Manufacturing Development phase thereby reducing cost and schedule by approximately fifty percent. The new design will still increase fuel efficiency over that of the HMMWV and MRAP while providing greater payload, protection and network capability than the HMMWV, and provides the ability to grow future capability.

HMMWV Depot Recapitalization (RECAP) is an Army Program to restore payload and performance of Up Armored HMMWVs (UAH) to the latest configuration as they return from Theater. The recapitalization program currently conducted at our depots extends the vehicle service life by 20 years, reduces operating and support costs, and improves system reliability. If the Army is not able to recapitalize the vehicles and add upgrades, approximately nine IBCTs worth of Up-Armored HMMWVs (UAHs) will not be completed. The Depot RECAP is approximately \$100K per vehicle in FY12. RDTE efforts are underway for the Modernized Expanded Capability Vehicle (MECV) program (previously known as the HMMWV Competitive RECAP program) to provide 5,700

vehicles at a cost of \$180K per vehicle for the Army's Air Assault and Airborne units. If the MECV program proves itself in testing and meets the estimated \$180K cost, the earliest production would be in late FY13. The MECV alleviates the requirement for JLTV in Light and Airborne units.

Aviation Portfolio. Army aviation is experiencing unprecedented demands from Afghanistan and Iraq. As a result, we are expanding our aviation units to meet the high demand. The Apache Block III program and CH-47F program multi-year buy are on schedule and within cost as are the Blackhawk upgrades and A to L conversions for the ARNG. The Raven and Shadow Unmanned Aerial Systems (UAS) are being upgraded to meet growing demand while the Grey Eagle UAS is being fielded.

Kiowa Warrior (OH-58). The Army approved a plan to reinvest in the OH-58D, our aging armed reconnaissance workhorse that is heavily used in the current fight. The main thrust of that reinvestment is the Cockpit and Sensor Upgrade Program (CASUP). It will convert the OH-58D to an OH-58F by addressing obsolete instruments, safety, and weight reduction efforts to include a nose mounted sensor which performs more effectively in current combat environments. This plan provides a solution to upgrade and advance the aircraft until a viable replacement is obtained. With technology upgrades, the Kiowa Warrior fleet is projected to remain relevant well into the 2020s.

Armed Aerial Scout. The Army is conducting an Analysis of Alternatives (AoA). The ongoing AoA has identified options that need further review to reduce design risk. The

Army plans to evaluate alternative options using a demonstration flight in FY12 to identify viable, low risk options for development. This incremental approach will reduce technical risk and development costs in the next phase of acquisition of an Armed Aerial Scout.

Soldier Modernization Portfolio. The Army has made tremendous progress in providing the Warfighter with the best protection, lethality, and situational awareness. There have been nine body armor improvements; research and development towards an Enhanced Combat Helmet, and evaluation of ballistic under garments. Significant improvements in weapon lethality, functionality, and accuracy have resulted in improvement of the M4 Carbine to the M4A1 Carbine; improvement of the M240B Machine Gun to the M240L Machine Gun; conversion of the M24 Sniper Rifle to the XM2010 Sniper Rifle, improvement of the M2 .50 CAL Machine Gun to the M2A1 .50 CAL Machine Gun, development of the new lightweight .50 CAL, and development of the Counter Defilade Target Engagement semi-automatic air burst system. We have made incredible strides toward increased situational awareness that include the new Enhanced Night Vision Devices, the Family of Night Sights, and the Laser Target Locator Modules.

#### **Successful Programs**

Numerous programs that you have supported have been successful. For example, we have fielded nine improvements of body armor, three new sniper rifles, improved M4 carbines, lighter weight crew served weapons and new camouflage uniforms to the Warfighter. We have also fielded the new MRAP-ATV (MATV) in theater and continue

to deliver our warfighters improved protection with an Underbelly Improvement Kit. We've fielded four new systems to ensure American Soldier dominance – Enhanced Night Vision Goggles, Laser Target Locators, Individual Gunshot Detection System, and micro laser range finders – going to our BCTs and Special Operations Forces. Also fielded in theater is the Stryker Double V Hull which is providing a significant improvement in protection for our Soldiers. Through twelve IED attacks, the most serious injury has been one broken ankle. Other successful programs include precision munitions, C-IED devices, UAS improvements of Raven UAS gimbaled payload and Shadow UAS performance enhancements, helicopter improvements of UH/HH-60M, CH-47F and AH-64D Block II aircraft and increased protection for medium and heavy tactical vehicles.

#### **Meeting the Debt Reduction Challenges**

Any large funding reductions will have a significant impact on the Army. They will have a disproportionate impact on modernization programs in the near term since they can be terminated or down sized rapidly unlike manpower adjustments. Modernization funding reductions will result in reduced scope and schedule slips for some priority programs and termination for other programs.

Preservation of critical Industrial Base capabilities will also be a consideration. The health of the industrial base is vital to maintaining our ability to invest in equipment for Soldiers. The Army is working closely with its Department of Defense counterparts and industry partners to continuously monitor all sectors of the industrial base, from the

smallest of sensors to the heaviest vehicles. Critical to ensuring our Warfighters have the capabilities they need, we must retain vital manufacturing capabilities, preserve the skilled workforce, and maintain the ability to surge production when the Nation requires it.

The Army goal is to achieve a smaller, but fully capable force. We are working to reach a balance across manpower, operations and training, modernization and equipping to achieve that goal.

**Closing**

These continue to be challenging times for our Nation and for our military. I can assure the members of this committee – your Army's senior leaders remain focused and are working hard to address current challenges and the needs of the Army now and in the future. We will do this with affordability as our watchword as we endeavor to remain good stewards of our Nation's resources.

Mr. Chairman, members of the subcommittee, I thank you again for your steadfast and generous support of the outstanding men and women of the United States Army, Army Civilians and their Families. I look forward to your questions.

United States Government Accountability Office

**GAO**

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

For Release on Delivery  
Expected at 2:00 p.m. EDT  
Wednesday, October 26, 2011

## DEFENSE ACQUISITIONS

### Future Ground-Based Vehicles and Network Initiatives Face Development and Funding Challenges

Statement of Belva M. Martin, Director  
Acquisition and Sourcing Management





Highlights of GAO-12-181T, a testimony before the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

### Why GAO Did This Study

After the Army canceled the Future Combat System in June of 2009, it began developing modernization plans, including developing a new Ground Combat Vehicle (GCV) and additional network capability. At the same time, the Army was considering options on how to improve its light tactical vehicles.

This statement addresses potential issues related to developing (1) the new GCV, (2) a common information network, and (3) the Joint Light Tactical Vehicle (JLTV) in a constrained budget environment. The statement is based largely on previous GAO work conducted over the last year in response to congressional requests and results of other reviews of Army modernization.

To conduct this work, GAO analyzed program documentation, strategies, and test results; interviewed independent experts and Army and Department of Defense (DOD) officials; and witnessed demonstrations of current and emerging network technologies.

DOD reviewed the facts contained in this statement and provided technical comments, which were incorporated as appropriate.

### What GAO Recommends

GAO is not making any recommendations with this statement; however, consistent with previous work, this statement underscores the importance of developing sound requirements and focusing up front on what modernization efforts will deliver and at what cost.

View GAO-12-181T. For more information, contact Belva Martin at (202) 512-4841 or martinb@gao.gov.

October 26, 2011

## DEFENSE ACQUISITIONS

### Future Ground-Based Vehicles and Network Initiatives Face Development and Funding Challenges

#### What GAO Found

Delivering a feasible, cost-effective, and executable GCV solution presents a major challenge to the Army, with key questions about the robustness of the analysis of alternatives, the plausibility of its 7-year schedule, and cost and affordability. DOD and the Army have taken steps to increase oversight of the program, but resolving these issues during technology development will remain a challenge. For example, the Army has already reduced some requirements and encouraged contractors to use mature technologies in their proposals, but the 7-year schedule remains ambitious, and delays would increase development costs. Independent cost estimates have suggested that 9 to 10 years is a more realistic schedule. Over the next 2 years during the technology development phase, the Army faces major challenges in deciding which capabilities to pursue and include in a GCV vehicle design and determine whether the best option is a new vehicle or modifications to a current vehicle.

The Army's new information network strategy moves away from a single network development program to an incremental approach with which feasible technologies can be developed, tested, and fielded. The new strategy has noteworthy aspects, such as using periodic field evaluations to assess systems that may provide potential benefit and getting soldier feedback on the equipment being tested. However, the Army has not articulated requirements, incremental objectives, or cost and schedule projections for its new network. It is important that the Army proceed in defining requirements and expected capabilities for the network to avoid the risk of developing individual capabilities that may not work together as a network. With the cancellation last week of its ground mobile radio and continuing problems in developing technology to provide advanced networking capability, the Army will still need to find foundational pieces for its network.

The Army is reworking earlier plans to develop and acquire the JLTV and is planning to recapitalize some of its High Mobility, Multipurpose Wheeled Vehicles (HMMWV). These efforts have just begun, however, and their results are not yet assured. To reduce risk in the JLTV program, the services relied on multiple vendors during technology development to increase their knowledge of the needed technologies, determine the technology maturity level, and determine which requirements were achievable. As a result, the services identified trades in requirements to drive down the cost of the vehicle. For example, the services found that JLTV could not achieve both protection level and transportability goals, so the services are accepting a heavier vehicle. A potential risk for the services in allowing industry to build vehicles for testing is that the prototypes may not be mature; the Army will need to keep its options open to changes that may result from these tests. Both the Army and the Marine Corps have articulated a significant future role for their Up-Armored HMMWV fleets, yet the fleets are experiencing reduced automotive performance, the need for better protection as threats have evolved, and other issues. The Army is planning to recapitalize a portion of its Up-Armored HMMWV fleet to increase automotive performance and improve blast protection. The Marine Corps' plans to extend the service life of some of its HMMWVs used in light tactical missions are not yet known.

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Chairman Bartlett, Ranking Member Reyes, and Members of the Subcommittee:

I am pleased to be here today to discuss the Department of the Army's recent initiatives to acquire ground-based combat and tactical vehicles and an information network capability. In the wake of the June 2009 decision to cancel the Future Combat System, which included a new class of manned ground vehicles anchored by an advanced information network, the Army began developing plans for a new Ground Combat Vehicle (GCV) and an incremental tactical network capability. At about the same time, the Army began considering ways to improve its light tactical vehicles and developed the Joint Light Tactical Vehicle (JLTV) program with the U.S. Marine Corps. My statement today, based largely on work we have conducted over the last year in response to requests from this subcommittee and results of other reviews of Army modernization, will address potential issues that the Army faces as it prepares to make significant decisions on its GCV, network, and light tactical vehicle programs in this constrained budget environment.

To assess the GCV program, we analyzed program documentation, such as the Initial Capabilities Document and the Technology Development Strategy; interviewed Army and Department of Defense (DOD) officials; and interviewed independent experts and reviewed their analyses. We analyzed the Army networking and management strategy, and compared that strategy with DOD acquisition policy and best practices. We also observed demonstrations of current and emerging networking equipment, analyzed evaluation results, obtained soldier feedback, and met with Army and DOD officials who are involved in defining the tactical network. To assess JLTV, we analyzed documentation, interviewed Army and Marine Corps officials, and analyzed how the Mine Resistant Ambush Protected (MRAP) vehicle program, including the MRAP-All Terrain Vehicle (M-ATV), has influenced the JLTV program. We also obtained and reviewed JLTV test results and interviewed test officials. To assess the High Mobility, Multipurpose Wheeled Vehicle (HMMWV) recapitalization plan, we analyzed both services' respective plans for future recapitalization efforts, reviewed past efforts, and interviewed Army and Marine Corps officials.

We conducted work on these Army programs as part of performance audits from December 2010 to October 2011, 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



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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.

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## Background

The Army's ground-based military operations generally use two kinds of vehicles: combat vehicles designed for a specific fighting function and tactical vehicles designed primarily for multipurpose support functions. Most combat vehicles move on tracks—including the Abrams tank and the Bradley Fighting Vehicle—but some move on wheels, such as the Stryker. Tactical vehicles generally move on wheels, including the HIMMWW and the JLTV.

Most major defense acquisitions follow a structured acquisition process, which normally consists of three discrete phases: (1) technology development; (2) engineering and manufacturing development; and (3) production and deployment. Programs are expected to meet certain criteria at milestone decision points for entry into each phase.<sup>1</sup> For anticipated major defense acquisition programs,<sup>2</sup> like the GCV and the JLTV, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD/ATL) generally serves as the Milestone Decision Authority. The Milestone Decision Authority is responsible for approving the programs' entry into the defense acquisition system, approving entry into subsequent phases, and documenting the various approvals through acquisition decision memorandums.

The Army's GCV program is intended to modernize the current ground combat vehicle fleet, replacing a portion of the Bradley Infantry Fighting Vehicles currently in inventory. In February 2010, the Army issued a request for proposals for the technology development phase of the GCV before completing the required analysis of alternatives (AOA), citing schedule urgency. In May 2010, the Army convened a "Red Team" to assess the risk of achieving the GCV schedule. The Red Team issued its

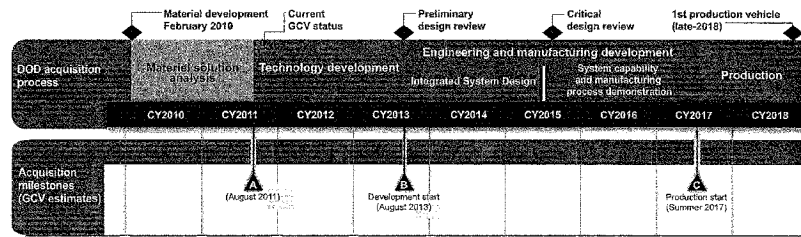
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<sup>1</sup>Milestone A is the point at which a program enters the technology development phase, milestone B is entry into the engineering and manufacturing development phase, and milestone C is entry into the production and deployment phase.

<sup>2</sup>Major defense acquisition programs are those identified by DOD that require eventual total research, development, test, and evaluation expenditures, including all planned increments, of more than \$365 million, or procurement expenditures, including all planned increments, of more than \$2.19 billion, in fiscal year 2000 constant dollars.

report in August 2010, citing major risk areas including schedule, technical maturity, and affordability of the system. The Army rescinded the original request for proposals and issued another in late 2010. The milestone A decision was expected in April 2011, but did not occur until August 2011 (see fig. 1). In August, the Army awarded technology development contracts to two contractor teams. A third contractor team submitted a proposal but did not receive a contract award and has filed a bid protest with GAO that is still being considered.

Figure 1: GCV Program Events



Source: GAO analysis of Army data and the DOD acquisition process.

The Army has been defining a strategy to develop, demonstrate, and field a common tactical information network across its forces. Generally, such a network is expected to act as an information superhighway to collect, process, and deliver vast amounts of information such as images and communications while seamlessly linking people and systems. The Army's current strategy is to better understand current Army networking capabilities, determine capabilities needed, and chart an incremental path forward. The Army plans regular demonstrations as the network grows and its capability improves.

The Army and Marine Corps generally define light tactical vehicles as capable of being transported by a rotary wing aircraft and with a cargo capacity of equal to or less than 5,100 pounds. Light tactical vehicles represent about 50 percent of the Army's tactical wheeled vehicle fleet and currently consist of the HMMWV family of vehicles. The Army's HMMWV program also provides vehicles to satisfy Marine Corps, Air Force, and other requirements. The JLTV is expected to be the next generation of light tactical vehicles and is being designed to provide the

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advances in protection, performance, and payload to fill the capability gap remaining between the HMMWV and MRAP family of vehicles.<sup>3</sup> JLTV is being designed to protect its occupants from the effects of mines and improvised explosive devices without sacrificing its payload capability or its automotive performance, which has not been the case with the other tactical wheeled vehicles.

The Army's recent history with its acquisition programs was the subject of a review by a panel chartered by the Secretary of the Army. In its January 2011 report,<sup>4</sup> the panel noted that the Army has increasingly failed to take new development programs into full-rate production. From 1990 to 2010, the Army terminated 22 major defense acquisition programs before completion. While noting many different causes that contribute to a program's terminations, the panel found that many terminated programs shared several of the same problems, including weak trade studies or analyses of alternatives; unconstrained weapon system requirements; underestimation of risk, particularly technology readiness levels; affordability reprioritization; schedule delays; and requirements and technology creep. The panel made a number of recommendations to help make the Army's requirements, resourcing, and acquisition processes more effective and efficient.

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<sup>3</sup>The HMMWV has served as DOD's primary wheeled vehicle for shelter carriers, command and control systems, light cargo and troop carriers, weapons carriers, and ambulances for over 25 years. MRAPs were acquired to support operations in Iraq and Afghanistan and are designed to better mitigate the effects of improvised explosive devices, underbody mines, and small arms fire threats.

<sup>4</sup>Office of the Secretary of the Army, *Army Strong: Equipped, Trained and Ready, Final Report of the 2010 Army Acquisition Review* (Washington, D.C.: Jan. 2011).

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### Army Faces Major Challenges to Identify a Feasible, Cost-Effective, and Executable GCV Solution

Over the next 2 years during the technology development phase, the Army faces major challenges to identify a feasible, cost-effective, and executable solution that meets the Army's needs. Among these are making choices on which capabilities to pursue and include in a GCV vehicle design and determining whether the best option is a new vehicle or a modified current vehicle. In our March 2011 testimony,<sup>5</sup> we identified key questions about GCV pertaining to how urgently it is needed, robustness of the analysis of alternatives, plausibility of its 7-year schedule, cost and affordability, and whether mature technologies would be used. Since that time, the Army has moved the CGV program into the technology development phase. DOD and the Army have taken positive steps to increase their oversight of the program; however, the timely resolution of issues surrounding the areas previously identified will be a major challenge.

- **Urgency of need:** The Army's recent combat vehicle capability portfolio review confirmed the Army's need for GCV as a Bradley Infantry Fighting Vehicle replacement and USD/ATL approved the GCV acquisition program.<sup>6</sup> USD/ATL agreed that the Army has a priority need for a GCV but the number of caveats in the approval decision (as discussed below) raises questions about the soundness of the Army's acquisition plans and time lines.
- **Analysis of alternatives:** After initially bypassing completion of the AOA process, the Army subsequently conducted an AOA but was directed by USD/ATL to conduct more robust analyses, throughout the technology development phase, to include design and capability trades intended to reduce technical risks and GCV production costs. We have reported that a robust AOA can be a key element in ensuring a program has a sound, executable business case prior to program initiation and that programs that conduct a limited AOA tended to experience poorer outcomes—including cost growth.<sup>7</sup> The

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<sup>5</sup>GAO, *Defense Acquisitions: Key Questions Confront the Army's Ground Force Modernization Initiatives*, GAO-11-425T (Washington, D.C.: March 9, 2011).

<sup>6</sup>Capability portfolio reviews are the Army's process for identifying and eliminating redundant systems, and ensuring that funds are properly programmed, budgeted, and executed for surviving systems in order to yield the most value to the Army.

<sup>7</sup>GAO, *Defense Acquisitions: Many Analyses of Alternatives Have Not Provided a Robust Assessment of Weapon System Options*, GAO-09-665 (Washington, D.C.: Sept. 24, 2009).

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Army is expected to include sensitivity analyses in the AOA to explore trade-offs between specific capabilities and costs. These analyses will be supported by assessments of existing combat vehicles to determine whether they are adequate alternatives to a new vehicle, or whether some of the designs or capabilities of existing vehicles should be incorporated into a new GCV. Concurrently, the GCV contractor teams will conduct design trades and demonstrate technologies, the results of which will also be fed back into the AOA updates.

- **Plausibility of 7-year schedule:** The Army's plan to deliver the first production vehicles in 7 years still has significant risk. Since GCV was originally conceived in 2009, the Army has already reduced some requirements and encouraged interested contractors to use mature technologies in their proposals. However, the schedule remains ambitious and USD/ATL has stipulated that the Army will need to demonstrate that the schedule is both feasible and executable. According to an independent Army program evaluator, the next 2 years of technology development will require many capability and requirements trades in order to better define an acceptable solution at the same time that technology risks for that solution are to be identified and mitigated. Concurrent activities can lead to poor results, calling into question whether the 7-year schedule is executable. The independent cost estimate submitted for the milestone A review featured higher GCV development costs with the assumption that the Army would need 9 or 10 years to complete the program, instead of the assumed 7 years.
- **Cost and affordability:** Cost continues to be a challenge, as an independent cost estimate was at least 30 percent higher than the Army's estimate for GCV procurement. USD/ATL has directed that continued program approval depends on the Army's ability to meet the \$13 million procurement unit cost target. As for affordability, with the expectation that less funding will be available in coming years, the Army has made some trades within the combat vehicle portfolio. According to Army officials, the Army plans to proceed with GCV as currently planned, but several other combat vehicle programs—such as anticipated upgrades for the Bradley, Abrams, and Stryker vehicles—are being reshaped or delayed.
- **Use of mature technologies:** The Army encouraged interested contractor teams to use mature technologies in their GCV proposals. Due to the current bid protest, we do not have insight into what the contractor teams proposed in terms of specific critical technologies or their maturity. A DOD official stated, and we agree, that it will be

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important that technologies be thoroughly evaluated at the preliminary design review before the decision to proceed to the engineering and manufacturing development phase.

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**Ambitious Army  
Information Network  
Strategy Has  
Noteworthy Aspects  
but Unresolved Issues  
Could Affect Long-  
Term Implementation**

The Army has taken a number of steps to put together a more realistic strategy to develop and field an information network for its deployed forces than the network envisioned for the Future Combat System program. However, the Army is proceeding without defining requirements for the network and articulating clearly defined capabilities. As a result, the Army runs the risk of developing a number of stovepipe capabilities that may not work together as a network, thus wasting resources. The Army has moved away from its plan for a single network development program under Future Combat System to an incremental approach with which feasible technologies can be developed, tested, and fielded. This planned approach reflects lessons learned and changes the way the Army develops, acquires, and fields network capabilities. Under this new approach, numerous programs will be developed separately and coordinated centrally, and network increments will be integrated and demonstrated in advance of fielding rather than the previous practice of ad hoc development and integration in the field. A key aspect of the implementation of the new approach will be aligning the schedules of the separate programs with the Army's planned, semiannual field events, called network integration evaluations, where emerging technologies are put in soldiers' hands for demonstration and evaluation.

Several key aspects of the Army's Network Strategy include:

- In our March 2011 testimony,<sup>8</sup> we pointed out that roles and responsibilities for network development were not clear. Since then, senior Army leadership issued a directive detailing the collective roles, responsibilities, and functions of relevant Army organizations involved with the network modernization effort.
- The Army is currently working to establish a comprehensive integrated technical baseline for the network and addressing prioritized capability gaps. With this baseline, the Army expects to build on elements of the network already in place with an emphasis on capturing emerging technologies that deliver capability incrementally

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<sup>8</sup>GAO-11-425T.

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to multiple units at the same time. This represents a significant departure from the previous practice of fielding systems individually and often to only one element of the operational force at a time (for instance, companies, battalions, or brigades).

- The network integration evaluations are a key enabler of the Army's new network strategy and assess systems that may provide potential benefits and value to the Army while identifying areas requiring additional development. The evaluation process provides the Army an opportunity to improve its knowledge of current and potential network capability. Additionally, it provides soldier feedback on the equipment being tested. For example, members of the Army's network test unit, the Brigade Modernization Command, indicated that a number of systems tested should be fielded and other systems that should continue development.

Several issues will need to be resolved as the Army implements its network strategy. For example,

- The Army has not yet announced requirements nor has it established cost and schedule projections for development and fielding of its network. Since the Future Combat System termination, the Army does not have a blueprint or framework to determine how the various capabilities it already has will fit together with capabilities it is acquiring to meet the needs of the soldier. Even with an incremental approach, it is important for the Army to clearly articulate the capabilities the system is attempting to deliver. Without this knowledge, the Army runs the risk of acquiring technologies that may work in a stand-alone mode but do not add utility to the broader network strategy.
- The network integration evaluation provided an extensive amount of data and knowledge on the current Army network and candidate systems for the network. However, since the network integration evaluation serves as an evaluation instrument, it is important to have test protocols that capture objective measures and data on the network's performance. Two independent Army test oversight agencies, reflecting on the evaluation results, expressed concern over not having proper instrumentation for the overall evaluations; in particular, not having the necessary instrumentation to conduct operational tests on large integrated networks and not having clear network requirements.

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- Army officials are developing a strategy to identify, demonstrate, and field emerging technologies in an expedited fashion. To date, the Army has developed an approach to solicit ideas from industry and demonstrate the proposed technologies in the network integration evaluation. However, the Army is still formulating its proposed approach for funding and rapidly procuring the more promising technologies.
  - Development of the Joint Tactical Radio System ground mobile radio, a software-defined radio that was expected to be a key component of the network has recently been terminated. In a letter to a congressional defense committee explaining the termination, the acting USD/ATL stated that the termination was based on growth in unit procurement costs. He added that it is unlikely that Joint Tactical Radio System ground mobile radio would affordably meet requirements and may not meet some requirements at all. The radio performed poorly during the network integration evaluation and was given a "stop development and do not field" assessment by the test unit. Based on the assessment that a competitive market had emerged with the potential to deliver alternate radios to meet the capability at a reduced cost, the acting USD/ATL also established a new program for an affordable, low-cost, reduced size, weight, and power radio product. At this point, it is not yet clear when and how that program will proceed or how these new radios will be able to fit within the Army's network strategy.
  - The Army plans for the future tactical network to feature the use of the wideband networking and soldier radio waveforms and, in our March 2011 testimony,<sup>9</sup> we reported that the Army has had trouble maturing these waveforms for several years and they are still not at acceptable levels of maturity.<sup>10</sup> Although both waveforms experienced limited successes during the recent network integration evaluation testing, Army officials indicate that the wideband networking waveform continues to be very complex, and not fully understood, and there may be substantial risk maturing it to its full capability requirement. With the termination of the ground mobile radio, it is unclear how waveform maturation will continue.

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<sup>9</sup>GAO-11-425T.

<sup>10</sup>A waveform is the representation of a signal that includes the frequency, modulation type, message format, and/or transmission system. The wideband networking and soldier radio waveforms provide key advanced networking capability.



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- Although the network integration kit—expected to be a fundamental part of the Army's information network—was found to have marginal performance, poor reliability, and limited utility, the USD/ATL approved procurement of one additional brigade set of network integration kits. The decision made potential fielding of the kits—radios, waveforms, integrated computer system, and software—contingent on user testing that successfully demonstrates that it can improve current force capabilities. The network integration kit again performed poorly during the recent network integration evaluation and received a "stop development and do not field" assessment. Army network officials have indicated that a senior Army leadership memorandum will be forthcoming that will cancel further network integration kit development and fielding. Earlier, the Army concluded that the network integration kit was not a long-term, viable, and affordable solution.

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### Services to Rely on Industry to Provide Potential Solutions for Tactical Wheeled Vehicle Needs

To reduce risk in the JLTV program, the Army and Marine Corps entered a technology development phase with multiple vendors to help increase their knowledge of the needed technologies, determine the technologies' maturity level, and determine which combination of requirements were achievable. The contractors delivered prototype vehicles in May 2010 and testing to evaluate the technical risks in meeting the proposed requirements, among other things, was completed on the vehicles in June 2011. Because of the knowledge gained through the technology development phase, the services have worked together to identify trades in requirements to reduce weight and to drive down the cost of the vehicle. A different outcome may have resulted if the services had proceeded directly to the engineering and manufacturing development phase, as had been considered earlier.

Based on the technology development results, the services concluded that the original JLTV requirements were not achievable and its cost would be too high. For example, the services found that JLTV could not achieve both protection levels and transportability, with weight being the issue. As a result, the services have adjusted the JLTV transportability requirement to a more achievable level and the Army and Marine Corps have decided that they would rely on HMWVs for other missions initially intended for JLTV. In fact, the Army has chosen to proceed with even higher protection levels than planned earlier for JLTV. The Army now plans to have protection levels equal to the M-ATV, including underbody protection, while the Marine Corps will continue with the original protection level, similar to the MRAP family of vehicles except for the underbody protection, but plans to conduct more off-road operations to

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avoid mines and roadside bombs. As for armor protection, the services have found that development of lightweight, yet robust armor has not proceeded as rapidly as hoped and production costs for these new technologies are significantly higher than for traditional armor.

The services have established an average procurement cost target of \$350,000.<sup>11</sup> A key component of the average procurement cost is the average manufacturing unit cost which includes the cost of labor, materials, and overhead to produce and assemble the product. Achieving the average procurement cost target of \$350,000 would require an average manufacturing unit cost of \$250,000 to \$275,000. While one recent technology development projection of a fully armored JLTV average procurement cost exceeded \$600,000, the program office now estimates that, by implementing requirements trades and the cost savings from those trades, industry can meet the average manufacturing unit cost and average procurement cost targets. Nevertheless, meeting the JLTV cost targets will be a challenge and will also likely depend on what type of contract the services award. The services' current JTLV plan is to award a multiyear procurement contract with sizable annual quantities, once a stable design is achieved.

Originally, the services planned to follow a traditional acquisition approach for JLTV and enter the engineering and manufacturing development phase in January 2012. According to the Army program manager for light tactical vehicles, the services now plan to use a modified MRAP acquisition model in which industry would be asked to build a set of vehicles that would subsequently be extensively tested prior to a production decision. The Army has stated that industry had demonstrated several competitive prototypes whose performance and cost has been verified and believes that industry can respond with testable prototypes within about 1 year. Many details of the new strategy have yet to be worked out but a milestone B review is anticipated in April 2012. While this approach is seen as saving time and money, it will forgo the detailed design maturation and development testing process typically done early in the engineering and manufacturing development phase. A key risk is the potential for discovering late that the vehicles are still not mature.

<sup>11</sup>The average procurement unit cost includes the average for such items as the costs of procuring technical data, training, support equipment, and initial spares. In addition, the cost of armor options would be an additional \$60,000 per unit.

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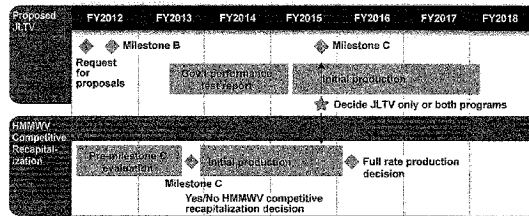
**HMWV Recapitalization Effort**

Both the Army and the Marine Corps have articulated a significant role for the Up-Armored HMMWV in combat, combat support, and combat service support roles beyond fiscal year 2025 but their fleets are experiencing reduced automotive performance, loss of transportability, higher operation and sustainment costs, and the need for better protection as the threats have evolved. The Army plans to recapitalize a portion of its Up-Armored HMMWV fleets by establishing requirements, seeking solutions from industry through full and open competition, and testing multiple prototype vehicles before awarding a single production contract. The Army's emerging effort—the Modernized Expanded Capacity Vehicle program—aims to modernize vehicles to increase automotive performance, regain mobility, extend service life by 15 years, and improve blast protection. The initial increment of recapitalized vehicles for the Army is expected to be about 5,700, but depending on the availability of funds, the quantity for the Army could increase. The Army plans a two-phased acquisition strategy for recapitalizing the Up-Armored HMMWV that includes awarding contracts to up to three vendors for prototype vehicles for testing and a production contract to a single vendor. The production decision is scheduled for late fiscal year 2013. The Army is anticipating a manufacturing cost of \$180,000 per vehicle, not including armor, based on the cost performance of similar work on other tactical platforms managed by the Army.

According to the Marine Corps developers, the Marine Corps has concluded a recapitalized HMMWV will not meet requirements for its fleet of 5,000 light combat vehicles. However, it will conduct research to find the most effective way to sustain the balance of the fleet—about 14,000 vehicles—until 2030. The Marine Corps plans to leverage components and subsystems from the Army-sponsored HMMWV recapitalization program. Detailed information on this effort is not currently available. Marine Corps and Army officials have said they intend to cooperate on the recapitalization effort and are sharing information on their individual plans to help maximize value for the available funding.

As the services proceed to implement their new JLTV and HMMWV strategies, they have identified a point in fiscal year 2015 (see fig. 2) where a decision will be made on whether to pursue JLTV only or both programs. By then, the technology and cost risks of both efforts should be better understood.

Figure 2: JLTV and HMMWV Competitive Recapitalization Schedules



Source: GAO analysis of program office information.

### Concluding Remarks

The Army continues to struggle to define and implement a variety of modernization initiatives since the Future Combat System program was terminated in 2009. The most recent example of this is the termination of the ground mobile radio, which will require the Army to develop new plans for relaying information to the soldier. The pending reductions in the defense budgets are having a significant impact on Army acquisition programs and the Army is already reprioritizing its combat vehicle investments. As plans for GCV move forward, it will be important for DOD, the Army, and the Congress to focus attention on what GCV will deliver and at what cost and how that compares to other needs within the combat vehicle portfolio. Beyond combat vehicles, DOD and the services will also be facing some tough decisions in the future on the tactical wheeled vehicle programs and the affordability of both the JLTV and the HMMWV recapitalization effort.

Over the last few years, the Army has been conducting capability portfolio reviews which have proven to be very helpful in identifying overlaps and setting priorities. The reviews were highlighted in the Army Acquisition Review and have been important in getting the Army to think more broadly and to look beyond the individual program. On both JLTV and GCV, as the requirements have been examined more closely, the services are finding that they can make do with less in terms of capabilities than originally anticipated and projected unit costs have been reduced significantly. It is important that the Army continue to use and improve on its capability portfolio review processes going forward and to consider a broad range of alternatives.

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Chairman Bartlett, Ranking Member Reyes, and Members of the Subcommittee, this concludes my prepared statement. I would be happy to answer any questions you may have at this time.

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**GAO Contact and  
Staff  
Acknowledgments**

For future questions about this statement, please contact me at (202) 512-4841 or martinb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this statement include William R. Graveline, Assistant Director; William C. Allbritton; Morgan DelaneyRamaker; Marcus C. Ferguson; Dayna Foster; Danny Owens; Sylvia Schatz; Robert S. Swierczek; Alyssa B. Weir; and Paul Williams.

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

OCTOBER 26, 2011

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**RESPONSES TO QUESTIONS SUBMITTED BY MR. BARTLETT**

General LENNOX and General PHILLIPS. Yes, the Army plans to incorporate the requirement of Rocket Propelled Grenade (RPG) protection as part of the Modernized Expanded Capacity Vehicle (MECV) Program. The MECV Program fully incorporates the concept of scalable armor with a base cab protection of small arms protection or greater, and B-kit armor to achieve protection similar to what is provided across the Mine Resistant Ambush Protected All Terrain vehicle fleet today.

The MECV Performance Specification is broken into two sections; an unclassified performance specification and a classified annex to that performance specification. Both address the scalable armor MECV specifications. Below is an unclassified excerpt of the RPG requirement from the classified annex:

[The information referred to is For Official Use Only and is retained in the committee files.]

[See page 22.]



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**QUESTIONS SUBMITTED BY MEMBERS POST HEARING**

OCTOBER 26, 2011

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### QUESTIONS SUBMITTED BY MR. BARTLETT

Mr. BARTLETT. How does the MRAP–All Terrain Vehicle (ATV) and MRAPs fit into the wheeled vehicle fleet along with HMMWVs and JLTVs? Why not just use the M–ATV and MRAPs which have proven to be combat effective?

General LENNOX. The Mine Resistant Ambush Protected (MRAP) and MRAP–All Terrain Vehicles (M–ATV) fit into the tactical wheeled vehicle fleet by complementing the light, medium and heavy systems. Approximately 15,000 MRAPs and 5,000 MATVs were produced and fielded to provide protected mobility for Soldiers supporting Operation Enduring Freedom and Operation Iraqi Freedom/Operation New Dawn. Of those projected to return from theater to the Army, the Army currently intends to place approximately 37% of the M–ATV and MRAP vehicles into unit Tables of Organization and Equipment (TOE) and within the training base, 59% into Army Prepositioned Stocks (APS), and 4% into war reserve and contingency retention stocks to be available for future conflicts.

The MRAPs being placed on unit TOEs are primarily for missions outside of the scope of HMMWV and JLTV. For example, MRAPs will be used as Route Clearance Vehicles (RCVs) and Explosive Ordnance Disposal (EOD) missions where their heavy armor and limited off-road ability fit well with the RCV and EOD mission requirements.

For those MRAPs/M–ATVs being placed in APS, they will perform missions close to those being executed successfully in operations today. These do have an overlap with the HMMWV and JLTV mission set. However, MRAP/M–ATV are: 1) insufficient in quantity to cover all Army protected mobility needs (i.e., current projected MRAP/M–ATV requirements are 46,000); 2) have limited off-road mobility for the broad range of missions sets executed by light tactical vehicles; and 3) are not cost effective to field further (the current cost projection for JLTV is 33% of the procurement and sustainment costs of MRAP/M–ATV costs). MRAP/M–ATV are not a practical replacement for our entire light tactical vehicle fleet requirement. JLTV capability is still required to meet all requisite missions.

Mr. BARTLETT. The 7-year GCV program has significant risk and is very costly. What will the Army do if significant funding reductions are made?

General LENNOX. The Ground Combat Vehicle (GCV) is the objective vehicle of the Army's Combat Vehicle Modernization Strategy. The GCV allows an infantry squad to accompany tanks in both open and complex terrain from initial contact to the objective. The GCV will fill capability gaps that currently exist in the formation for force protection, survivability, network interoperability, mobility, and lethality. The system has an iterative design that will allow for the growth of additional capabilities. The Army is committed to fully resourcing the GCV and has already made trades within the combat vehicle portfolio to ensure full funding of the GCV program.

Current funding develops critical technologies and allows for an analysis of alternatives that will further inform GCV requirements. The program is scheduled for Milestone B in 1QFY14.

In the event of further resource constraints, the Army intends to continue full funding of the GCV as it is one of the Army's most important programs

Mr. BARTLETT. What is the Modernized Expanded Capacity Vehicle (MECV) program and how does it align with the Army's light tactical vehicle strategy?

General LENNOX. The MECV program supports the Army's Light Tactical Vehicle (LTV) Strategy by filling the capability gap for External Air Transport requirement for Air Assault missions that will not be filled by the Joint Light Tactical Vehicle (JLTV). The Strategy states that the LTV fleet will be comprised of unarmored vehicles, UAHs and JLTVs. The MECV is part of the UAH fleet and will have a greater protection level as well as have the capability to be air-moved by the CH–47 helicopter.

It is also part of our modernization effort of the existing Up-Armored High Mobility Multipurpose Wheeled Vehicle (UAH) fleet. The MECV program is focused on providing about ~6,000 vehicles or 1/10th of the oldest UAH fleet with improved protection similar to that of the Mine Resistant Ambush Protected All-Terrain Vehicle; while improving or maintaining adequate off road mobility to support maneuver

forces and provide payload capacity to support mission requirements. On 20 July 2011, a Materiel Developmental Decision was approved and authorization was granted for the MECV Competitive HMMWV Recapitalization Program to enter into pre-Milestone C. The Milestone C decision is scheduled for 4th Quarter of FY13.

Mr. BARTLETT. In regards to the Stryker Double V Hull, how many does the Army plan to procure and does the Army plan to go back and retrofit any current Stryker Brigades with the Double V Hull as they go through the reset process?

General LENNOX. The Army has a current procurement target of 2 Stryker Brigade Combat Teams (SBCT) with Double V Hulls (DVH), totaling 742 DVH Stryker vehicles, based on minimum operational and training needs. It would cost \$14B and approximately 14 years to outfit our entire current Stryker fleet with DVH, assuming 4 years of Research, Development, Test, and Evaluation and conversion of one SBCT per year. While this is a possible course of action, the Army is currently evaluating options for the composition and structure of its combat vehicle fleet. The Army currently has no plans to retrofit any current Stryker Brigades with the DVH as they go through the reset process. Once the Army decides on the appropriate fleet mix and number of combat vehicles, the number of DVH Strykers, and variants of Strykers, will be finalized.

Mr. BARTLETT. With the Army termination of the Autonomous Navigation System (ANS) prior to the Army obtaining the Technical Data Package (TDP), will the upcoming JIEDDO Requirements cost the Army more than completing the ANS to TDP? Is there merit in reviewing the ANS capability on various platforms besides the MM-UGV?

General PHILLIPS. Based on our analysis, it will cost the Army more to complete the ANS TDP than the Joint Improvised Explosive Device Defeat Organization (JIEDDO) plans to spend on a competitive evaluation of autonomous Counter Improvised Explosive Device solutions. The estimated cost to complete the ANS TDP (\$20M to \$27.5M) would be additive to the cost of either a competitive or sole source effort. The Army decision to cancel the Multi-Mission Unmanned Ground Vehicle, consisting of the ANS and Common Mobility Platform, was based on two critical pieces of information: (1) Performance of the competitive autonomy systems, and (2) lack of a documented requirement for the Unmanned Ground Vehicle, to include the ANS.

There is little, if any, merit in reviewing the ANS capability on other platforms because as determined during the Vice Chief of Staff, Army directed assessment; there are many on-going efforts capable of providing similar autonomous navigation capabilities. The JIEDDO recognizes this and is using an open competitive call to meet their needs at a potentially lower cost than the cost of ANS described above.

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Ms. MARTIN. In response to a recent request from this Subcommittee, we are starting a review of the Army's decision to cancel further development of the Autonomous Navigation System (ANS). At this point, we have not seen the upcoming JIEDDO requirements and do not know if the ANS capabilities are applicable. In our forthcoming review, we expect to develop an understanding of the ANS and how it fits with other initiatives in the unmanned ground vehicle arena.

Mr. BARTLETT. As the Army proceeds to implement its network investment strategy, what advice would you offer the Army on how to proceed? What are the major areas of risk for the Army to focus its management attention?

Ms. MARTIN. The Army's network investment strategy has a number of major areas of risk that deserve management attention. In our written statement, we highlighted risks to the Army's strategy of proceeding without:

- Clearly defined requirements for the overall network and articulating clearly defined capabilities for network components. These are important so that the various capabilities the Army is developing will work together as a network.
- Realistic cost and schedule projections for meeting incremental network objectives. We think it is a good idea to build on current capabilities in an incre-

mental fashion. However, cost and schedule projections are important so that decision makers can determine if progress is being made, reset objectives based on that progress, and make informed decisions about further program investments.

- A clear strategy to take advantage of the potential test data and information available from the Network Integration Evaluations (NIE) both in terms of the existing network and potential improvements. In terms of manpower, equipment, and logistics, these NIEs are expensive endeavors and it is important to have a strategy in place to fully capitalize on the resources and time invested in these evaluations.
- A well defined acquisition and contracting strategy for funding and rapidly procuring promising network technologies. Such a strategy will position the Army to procure the emerging technologies in a timely manner and at a fair price.
- Well-defined plans for developing and maturing software defined radios and waveforms. These plans are important so that the Army can make timely decisions about procuring radios in sync with technically mature waveforms.

As it proceeds to implement its network investment strategy, our advice would be for the Army to focus on resolving these risks to fully capitalize on current and emerging network capabilities.

Mr. BARTLETT. Similarly, from what you know so far, how do the Army's plans for the Ground Combat Vehicle differ from its plans to develop the manned ground vehicles within FCS?

Ms. MARTIN. The Army's plans for GCV are very different from the Future Combat System's (FCS's) manned ground vehicle (MGV) plans from both a vehicle capability perspective and a program management perspective. MGVs were to be a family of vehicles while GCV is expected to be a single purpose vehicle. The Army's intent with the MGVs was to replace vehicle mass with superior information. In other words, the vehicles would be much lighter than traditional combat vehicles and rely less on armor and more on information superiority for their survivability, which was to be provided by an advanced information network. After the FCS termination, the Army changed its position, realizing it could not completely eliminate the "fog of war" with networking, and it presented a GCV concept that was predicated on a more traditional vehicle protection approach that utilizes heavy armor. The Army also appears to have tempered its desire for revolutionary capabilities whose development would add cost and schedule risk to the program. With FCS vehicles, the Army wanted a number of capabilities—advanced information network, lightweight armor, and active protection system—that required significant advancements in technology. With GCV, the Army cancelled the original request for proposals over concerns that requirements were too demanding. Since then, the Army has revised its requirements and is allowing contractors to propose alternative ways to provide certain GCV capabilities.

The Army's acquisition plans for GCV are very different and much more conventional than its earlier MGV plans. The FCS program entered system development after a 1-year concept and technology demonstration period. It was approved for development despite having immature technologies and poorly defined requirements. Because of the FCS program's ambitious goals, the Army did not feel that it had the capacity to manage the program. As a result, the Army decided to employ a lead systems integrator to assist in defining, developing, and integrating FCS. The role of the integrator was not simply that of a traditional prime contractor but also included some elements of a partner to the government in ensuring the design, development, and prototype implementation of the FCS network and family of systems (including the MGV's). The FCS MGV's were 6 years into development before the program had accumulated enough knowledge to consider having a preliminary design review. At about the same time, the Secretary of Defense decided to cancel the MGV portion of the FCS program. With GCV, the Army is planning a 2-year technology development phase and is encouraging the contractors to use mature technologies in their subsystem designs. The Army plans to manage the GCV program in a more conventional manner. The Army will be using at least two contractors in technology development in an attempt to encourage innovation and competition and expects to have competing contractors in system development as well. The Army has shown flexibility on detailed GCV requirements and plans to have a preliminary design review prior to completion of the technology development phase.

Mr. BARTLETT. As the Army approaches the launch of the technology development phase for the Ground Combat Vehicle, what do you see as the major areas of risk for this program to meet its performance expectations within a 7-year schedule?

Ms. MARTIN. In March 2011, we reported that as it approached a Milestone A review, key questions on GCV pertain to how urgently it is needed, robustness of the analysis of alternatives, its cost and affordability, plausibility of its schedule, and

whether mature technologies will be used. We noted the importance of addressing such questions to getting a good start on demonstrating the match between GCV requirements and resources by the end of the technology development phase. In our October written statement, we noted that while the Under Secretary of Defense for Acquisition, Technology, and Logistics agreed that the Army had a priority need for a GCV, the number of caveats in the approval memorandum—which permitted the start of the technology development phase—raises questions about the soundness of the Army's acquisition plans and timelines. The Army is now conducting a more robust analysis of alternatives that considers non-developmental vehicles and their potential to provide an infantry fighting vehicle capability instead of a new vehicle program. The Army and its contractors will be expected to continue making capability and requirements trades in order to achieve a realistic vehicle design that can yield a first production vehicle within 7 years. The Army will face a challenge in achieving a fixed procurement cost target for GCV given that independent cost estimates are at least 30 percent higher than Army estimates. The expected reduction in the defense budget may impact GCV funding even with the Army making adjustments in its combat vehicle portfolio to make funding GCV a priority. While the Army has encouraged contractors to use mature technologies, it is not clear whether this is happening. The use of mature technologies can contribute to better acquisition program outcomes, while the use of immature technologies can be a leading indicator that programs are less likely to succeed within planned cost and schedule resources. Delivering a feasible, cost-effective, and executable GCV solution presents a major challenge to the Army. Over the next two years during the technology development phase, the Army faces major challenges in deciding which capabilities to pursue and include in a GCV vehicle design and determine whether the best option is a new vehicle or modifications to a current vehicle.

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#### QUESTIONS SUBMITTED BY MRS. ROBY

Mrs. ROBY. In working with the bases in my state, I understand the Army has a goal to have a joint multi-role aircraft for rotary wing transport on the books by 2030. The concern is that emphasis has been placed on modernizing our current rotary wing fleet and we may have lost sight on moving to a new platform. Current platforms are going limited even with modernization in several areas that we must move forward including: need crafts to go faster than 200 knots, reducing logistic footprint and reduce fuel consumption. With all of the concerns of what the action of Joint Select Committee on Deficit Reduction will have on DOD appropriations, what will the possible reduction in appropriations do in impacting that deadline?

General LENNOX. Reductions in appropriations for the Department of Defense could delay the development of technologies which could be applicable to the Joint Multi-Role Aircraft (JMR). Stable funding is key to developing and maturing these required technologies.

The Army fully intends to continue to pursue development of the JMR in an attempt to fill capability gaps that cannot be addressed now because current technologies are either infeasible or too immature. These capability gaps are in the areas of survivability, lethality, performance, maintainability, supportability, flexibility, and versatility. Development of the JMR will lead to common aircraft components that will be scalable in size and will provide a common aircraft architecture that will support mission-specific equipment packages to meet future vertical lift requirements.

While the Army pursues the development of the JMR, it must also continue with modernization efforts on current platforms to ensure that Army aviation units are modular, capable, lethal, tailorable, and sustainable. These modernization efforts mitigate capability gaps until the JMR technologies mature.

Mrs. ROBY. I proudly represent the Second District of Alabama that has Fort Rucker—the home of the U.S. Army Aviation Center of Excellence. Last week, we had the privilege of Chairman McKeon visiting the base and to see the training that our rotary wing aviators go through and the great work that our soldiers are doing there. Our rotary wing war fighters have been key to our mission in the Middle East.

However, helicopter incidents are the third-leading cause of fatalities in the Iraq War. In Afghanistan, in 2008 helicopter-related losses was the number 1 cause of deaths with direct fire being the second cause and IED attacks as third. Weather-related issues, disorienting brownout conditions, engine failure, wire strikes and flying into terrain of which the pilot was unaware accounts for 80 percent of Iraq and

Afghanistan helicopter losses. Environmental conditions affect every facet of rotary wing operations. However, many of these losses can be mitigated with various new technologies, glass cockpit, and other capabilities to give the pilot the necessary tools.

My question is how is the Army moving to encompassing these new instruments and capabilities to provide the war fighter with the necessary tools to mitigate many of these causes of helicopter incidents?

General LENNOX. Every aircraft currently under procurement has a fully modernized cockpit which includes flight symbology for all modes of flight, moving maps and enhanced flight controls improving controllability.

The Army is demonstrating significant improvement in the most damaging class of accidents attributed to Degraded Visual Environment (DVE). This improvement may be attributed to the ongoing aircraft modernization investment, however, DVE remains a significant factor in the majority of non-hostile accidents. Despite noted improvements, the Army continues to evaluate potential systems to enhance the pilot's ability to maintain situational awareness when visual references are lost. In addition, we are seeking focused solutions including active radar penetrating sensors to "see through" brownout in the non-modernized fleet which may also supplement our modernized fleet's capability. As technology improves the Army will continue to develop the right mix of mission planning systems, symbology, flight controls, displays and sensors to turn DVE from a hazard to a tactical advantage on the battlefield.

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Mrs. ROBY. My understanding is that the Army had been looking to have a new joint multi-role rotary wing aircraft by 2030. What are the plans of the Army in continuing to move forward with this development of a new platform? With current cuts and possible additional cuts due to the Budget Control Act, what possible impact can it have to the 2030 timeframe?

Ms. MARTIN. Based on our previous work, we know that the Army decided over the last few years to focus its attention and resources on upgrading and maintaining its current rotary wing aircraft fleet. There are several reasons for this decision. For example, that fleet was being used extensively in the ongoing war efforts. The Army also concluded that the current fleet would be sufficiently capable at least for the near- and mid-term. In addition, the Army concluded that developing a new generation of rotary wing aircraft would be a major effort with significant cost and technical risks. Nevertheless, the Army has recently released to industry a request for information on potential capabilities for a Joint Multi-Role helicopter. With the prospects for reductions in DOD and Army acquisition accounts, however, it is unclear at this time when a rotary wing aircraft development program will be started.

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Ms. MARTIN. We are aware of the Army's attempts to address some of its issues with operating helicopters in the Middle East through the Joint Urgent Operational Needs/rapid acquisition process, but we do not know the status or results of the Army efforts.

Mrs. ROBY. In working with the bases in my state, I understand the Army has a goal to have a joint multi-role aircraft for rotary wing transport on the books by 2030. The concern is that emphasis has been placed on modernizing our current rotary wing fleet and we may have lost sight on moving to a new platform. Current platforms are going limited even with modernization in several areas that we must move forward including: need crafts to go faster than 200 knots, reducing logistic footprint and reduce fuel consumption. With all of the concerns of what the action of Joint Select Committee on Deficit Reduction will have on DOD appropriations, what will the possible reduction in appropriations do in impacting that deadline?

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#### QUESTIONS SUBMITTED BY MR. OWENS

Mr. OWENS. I understand there has been some confusion as to who will maintain control over the tactical ISR requirements and capabilities for EMARSS, and about the future of the EMARSS program itself. What is the Army's strategy going forward for EMARSS? Can you provide similar analysis on the strategy for the Joint Air-to-Ground Missile (JAGM) Program?

General LENNOX. The Army is currently executing the Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Program to build four Engineering and Manufacturing Development (EMD) aircraft, and is on track to deliver these aircraft by December 2012. The Army will conduct developmental and operational testing in support of a Fiscal Year 2013 Milestone C decision. The Army's acquisition objective at Milestone B was 36 aircraft.

Concurrently, the Army has placed the EMARSS program strategy under review. The Army is taking a serious look at EMARSS and similar capabilities, such as the Air Force's Liberty Project and the Army's Medium Altitude Reconnaissance and Surveillance System. This review is a coordinated effort with the Air Force to identify potential areas of joint efficiencies, while continuing to provide the best possible tactical aerial intelligence support to the Soldier on the ground. Included in this strategy review are discussions on service oversight and required quantities of aircraft across the services.

At this time, there are no Department of Defense (DOD) decisions transferring or terminating the EMARSS Program, and it is still a subject for program review. An Inter-service transfer of any of these programs is one of many courses of action being considered. As the DOD faces fiscal constraints, the Army is exploring joint interdependent options to field the right mixture of aerial intelligence systems.

The Army intends to provide candid program updates as the EMARSS strategy becomes more refined in the coming months.

Considering the JAGM strategy the Army is following a Three-Phased Acquisition Approach:

1.) Technology Development (TD) Phase consisted of two contractors being awarded fixed-price incentive firm (FPIF) contracts competing over a 27-month period through Preliminary Design Review (PDR). Both contractors successfully completed this phase and their Engineering and Manufacturing Development (EMD) proposals are currently being reviewed in the Source Selection Evaluation Board (SSEB) process. One contractor team will be down-selected at Milestone B and awarded a 4-year EMD Contract.

Mr. OWENS. What is the strategy or plan to provide the Army with a modern Armed Aerial Scout aircraft to replace the old OH-58? I would be interested to see your analysis on the cost/benefit implications for continually upgrading existing aircraft as opposed to fielding a new platform.

General LENNOX. The strategy or plan to replace the OH-58 has not been fully determined. An Analysis of Alternatives (AoA) is currently being conducted to analyze the question of whether to continue to upgrade the OH-58 or to develop a more capable platform. Cancellation of both the RAH66 Comanche Helicopter in 2004 and the Armed Reconnaissance Helicopter (ARH) in 2008 required that the Army pursue a two-fold strategy to address the Armed Aerial Scout (AAS) capability.

First, the current OH-58D Kiowa Warrior (KW) fleet needed various upgrades to close existing obsolescence, safety, and weight issues experienced during combat operations in Iraq and Afghanistan through the Cockpit and Sensor Upgrade Program (CASUP). CASUP is the acquisition program that will upgrade the OH-58 aircraft. First Unit Equipped (FUE) is slated for FY16 with a scheduled completion by FY21.

Secondly, an Analysis of Alternatives (AoA) was needed to address capability requirements for the AAS and to recommend solutions to either replace or upgrade the KW. The Training and Doctrine Command Analysis Center (TRAC) at Fort Leavenworth was tasked to perform the AoA and to specifically research the costs/benefits of investing in future upgrades to the OH-58F versus a new start program. Those results will be published with the release of the AoA. Initial findings briefed by TRAC in May 2011 stated that a new start program would provide performance improvements, but at a significantly higher cost. A program that offered a Commercial Off The Shelf (COTS) or Government Off The Shelf (GOTS) solution could potentially provide an affordable aircraft with trades in performance and schedule.

The AoA was initially planned for completion in April 2011, but the Army requested an extension of the AoA with a flight demonstration in order to consider

recent industry improvements in technology and aircraft performance. This information must be considered in order for the Army to make the most informed decision it can regarding the benefits of staying with the OH-58 or moving to another more capable platform. The data gained from the demonstration will provide information necessary to enable the Army to decide to either retain the OH-58F and invest in future improvements or to start a new AAS program.

