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**MARINE CORPS FORCE
PROTECTION EQUIPMENT FOR
OPERATION IRAQI FREEDOM AND
OPERATION ENDURING FREEDOM**

HEARING

BEFORE THE

SEAPOWER AND EXPEDITIONARY FORCES
SUBCOMMITTEE

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

HEARING HELD
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**MARINE CORPS FORCE PROTECTION EQUIPMENT FOR
OPERATION IRAQI FREEDOM AND OPERATION EN-
DURING FREEDOM**

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE,
Washington, DC, Tuesday, January 16, 2007.

The subcommittee met, pursuant to call, at 3 p.m. in room 2212, Rayburn House Office Building, Hon. Gene Taylor (chairman of the subcommittee) presiding.

**OPENING STATEMENT OF HON. GENE TAYLOR, A REPRESENT-
ATIVE FROM MISSISSIPPI, CHAIRMAN, SEAPOWER AND EX-
PEDITIONARY FORCES SUBCOMMITTEE**

Mr. TAYLOR. If the committee would come to order. The purpose of this hearing is to provide members of the subcommittee with the most current updates on the status and effectiveness of the Marine Corps' force protection equipment in Operation Iraqi Freedom and Operation Enduring Freedom. The subcommittee expects to hear how these current force protection initiatives are being produced and fielded in an expedited manner.

More importantly, this public hearing is an opportunity for the moms, dads, wives, and husbands of our fighting men and women to find what their leadership is doing to protect their loved ones against the unconventional and asymmetric threats that are the reality that our troops face in Afghanistan and Iraq.

This hearing is not a debate on the war in Iraq. This hearing was called to determine if everything that can possibly be done is being done to protect our troops. Of predictable interest to the subcommittee is the next generation of armored vehicles, the Mine Resistant Ambush Protected vehicles commonly referred to as MRAP. The committee will be very interested to understand the acquisition plans for these vehicles and any roadblocks in their rapid procurement.

I would like to welcome my mentor, my friend, and my fellow chairman, Roscoe Bartlett, who is just absolutely the best subcommittee chairman I could have been associated with, who has taught me a heck of a lot about respecting old Members. So if I ever fail to live up to your expectations, you let me know.

We also are fortunate to have one of the newest Members of Congress, retired Navy Admiral, Admiral Sestak from Pennsylvania, joining us.

Mr. Courtney, thank you very much for showing up.

But, most of all, Generals, we want to hear from you.

It was about a year ago that I had a visit from the former head of the Army Liaison Office, Colonel Jim Littig; and he explained to me that, in addition to the steps we have taken to up-armor the High Mobility Multi-purpose Wheeled Vehicle (HMMWV)—better body armor, the jammers—that a continuing mistake that was being made in Iraq was the fact that we were sending a flat-bottom vehicle out that was regularly being hit by mines. And all of the technology for V-bottom vehicles has been used by the Russians, by the South Africans and others for decades, that we are falling behind on that.

Particularly, a follow-up conversation that I was fortunate to have with Lieutenant General Stephen Blum actually said it is worse than a flat-bottom vehicle taking a blast, that actually the channel in the bottom of the HMMWV that is designed to protect the drive shaft actually has the unfortunate effect of shaping the charge so that much of the force of the blast ends up in the inside of the HMMWV.

So the HMMWV, the vehicle itself, is doing more than we ever expected it to do, but it is time to move on on that program for something that is safer for our Marines.

For the sake of the newer Members, I would hope you would walk them through all of the acquisitions.

I want to thank both of you for meeting with me last week. I was impressed with your knowledge. I was impressed with your desire to get the job done. You set a very ambitious target date to having these vehicles in Iraq and Afghanistan. Now that you have set that date freely, this committee expects you to—we are going to work with you to see that target is met.

So, without any further statement, Mr. Ranking Member, we would welcome your remarks.

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

Mr. BARTLETT. Thank you very much.

I would like to ask unanimous consent to submit my opening statement for the record.

Mr. TAYLOR. Okay.

Testifying before our committee today is Brigadier General Randolph Alles and Brigadier General Michael Brogan, both with the United States Marine Corps.

General Alles is the Commanding General of the Marine Corps War Fighting Laboratory. The War Fighting Lab is part of the Marine Corps Combat Development Command, and its stated purpose is to improve current and future expeditionary warfare capabilities across the full spectrum of conflict.

Brigadier General Alles is also the subject matter expert for improvised explosive devices (IED), IED jammers, and electronic countermeasures. He also represents the Marine Corps as a member of the Joint IED Defeat Organization.

General Brogan is the Commanding General of the Marine Corps Systems Command. His organization is the Acquisition Armor of the Marine Corps. He is responsible for all areas of Marine Corps

procurement, including an analysis of contractor performance, an area I am sure we will examine today.

I want to thank both of you. It is the norm, under the rules proposed by Congressman Skelton, for our witnesses to speak for five minutes. That will not be necessary today. Please take all the time that you feel necessary to inform the committee what the Marine Corps needs to see and is doing.

STATEMENT OF BRIG. GEN. RANDOLPH D. ALLES, COMMANDING GENERAL, MARINE CORPS WARFIGHTING LABORATORY, VICE CHIEF OF NAVAL RESEARCH

General ALLES. Mr. Chairman, Representative Bartlett, and members of the Seapower and Expeditionary Forces Subcommittee, thank you for the opportunity to appear before you today to discuss Marine Corps force protection efforts.

The Marine Corps is fighting today's wars while remaining focused on the challenges that lie ahead. We are mindful that the struggle against enemies of this Nation and her allies is multifaceted and generational in nature. Challenges to our national security interests in the years ahead will be characterized by a diverse array of emerging and deteriorating nation-states and non-state actors such as transnational terrorists and criminals. Our ability to achieve success on a fluid and linear battlefield will require a very agile and highly responsive force that is properly equipped, well trained, and maintained at a high state of readiness.

A fundamental dictum to our survivability and success in the current security environment is the need to structure processes that increase our responsiveness to the warfighter. We have streamlined the Urgent Universal Needs Statement process, shortening the timelines such that most are approved in under 90 days. The flexibility and timeliness to reprogram funds toward unanticipated emergency requirements remains a challenge and represents an area for improved support to increase responsiveness to our forward deployed forces.

We are fighting a thinking enemy who is trying very hard to kill us. As we modify our force protection measures, our enemies mature in their sophistication and lethality. We continue aggressively to adapt our training and equipment to this changing threat. Congress has responded rapidly, and generously, to our request for equipment and increased protection; and we take seriously our responsibility to manage these resources prudently.

The Marine Corps has made great strides in countering two of the most prominent threats we face: the Improvised Explosive Device and sniper. The Marine Corps Warfighting Lab is leading a four-pronged approach to countering the threat from snipers that focuses on increasing the ability to sense and warn, deny, protect, and respond. The Lab has leveraged the cooperative efforts of the Defense Advanced Research Projects Agency (DARPA), the Army, the Navy, the National Ground Intelligence Center, and numerous Marine Corps agencies in these efforts. Future sense and warn capabilities include optical, acoustic, and infrared detection and location.

We have made tangible progress countering IEDs. My written statement expands upon programs such as IED Detector Dogs, robotics, and IED neutralizers. These technologies provide a responsive detection and neutralization capability.

The Marine Corps, in coordination with the Office of Naval Research (ONR), is researching and investigating new materials and designs for integration into improved body armor systems that provide lightweight, modular protection for the individual consistent with identified requirements, both current and future.

Probably the single most effective item in protecting Marines has been our various vehicle-armoring efforts; and while we have saved countless Marine lives by doing so, the enemy is extremely adaptive and responds to our increased protection by making larger and more lethal types of IEDs. We remain diligent in working with the Joint IEDDO and supporting their various armor studies and tests, the results of which will be invaluable in pending and future protection efforts. The Army/Marine Corps Board has proven a valuable forum for coordination of not only requirements but, also, rapid response to Combatant Commander's requests such as Mine Resistant Ambush Protected (MRAP) vehicles.

In addition to material and technology solutions, the Marine Corps is working diligently to develop and implement training and education programs that mitigate risk, enhance force protection and contribute to our ability to accomplish the mission. Our rapid and effective lessons learned management system promptly captures the complexity of combat situations faced by our marines and sailors around the globe to enhance our training programs.

Looking ahead to the challenges of the long war, the Marine Corps has enhanced its counterinsurgency capabilities by completely revamping training and producing a body of publications that educates and informs our small and large unit leaders alike.

Through innovation, institutional adaptation and congressional support, your Marine Corps is obtaining the needed resources to prevail in the new security environment. The challenges we face are enormous, yet our past is replete with examples of how we have overcome daunting, seemingly insurmountable barriers that tested our resolve.

On behalf of all Marines and Sailors, we thank the committee for your continued support that has enhanced our warfighting capability, saved lives and allowed us to protect this great Nation in an uncertain world.

[The prepared statement of General Alles can be found in the Appendix on page 41.]

Mr. TAYLOR. General Brogan.

**STATEMENT OF BRIG. GEN. MICHAEL M. BROGAN,
COMMANDER, MARINE CORPS SYSTEMS COMMAND**

General BROGAN. Chairman Taylor, Congressman Bartlett, distinguished members of the subcommittee, I am honored to appear before you this afternoon to discuss with you Marine Corps force protection systems.

First, on behalf of all Marines, Sailors and their families, I want to thank you for your continued support of our Corps as we fight the long war on terror.

General Alles described for you the technologies that he examines. For my part, I will describe to you our commitment to providing force protection to our Marines to save lives, to reduce casualties and to limit the severity of their injuries.

Our goal is to ensure that our force protection requirements are quickly met with the best systems available. By partnering with industry and teaming with our sister services, we strive to meet this goal. We will describe for you several of those systems.

Because the threat changes, we have direct day-to-day communications with our U.S. Army counterparts. We discuss strategies for changing our armor systems not only for individual warfighters but also for our ground vehicles. We frequently partner with the Army to test and procure these armor systems. For example, through this partnership, we have been able to rapidly test and modify the armor that we have employed in our wheeled vehicle fleet.

Another area we are in close cooperation with the Army in benefiting our warfighter is the acquisition and fielding of Mine Resistant Ambush Protected vehicles, or MRAP, as you described, Mr. Chairman. These vehicles provide the best available protection for our warfighters against improvised explosive devices. These vehicles are designed with a V-shaped hull to protect the occupants from all three primary kill mechanisms of mines and IEDs: fragmentation, blast overpressure and acceleration.

The Marine Corps has already fielded several variances of MRAPs, the first of which was known at the time as the Cougar Hardened Engineer Vehicle. Since the start of Operation Iraqi Freedom, we fielded 27 Cougars in support of disposal teams and combat engineers. We have also fielded an initial procurement of 122 Joint Explosive Ordinance Disposal Rapid Response Vehicles, or JERRV, in support of joint EOD teams throughout the theater. We are on track to complete fielding of a follow-on procurement for 79 additional JERRV vehicles.

Last month, I awarded sole source contract for 200 additional vehicles to a company that is already in production. That is a bridge to get us in to a full and open competition so that we can expand the protection base and more rapidly put these vehicles in the hands of our warfighters. This effort will procure and field up to an additional 4,060 MRAP vehicles to our Nation's joint forces.

Another counter ID system that we are fielding is the lightweight mine roller. These rollers protect convoys from pressure-plate-activated mines or victim-initiated improvised explosive devices.

The need for lightweight rollers originated with Marines in the theater. Our initial urgent requirement, which we received in June of 2006, was for 31 systems. A quick query of industry identified only one company who had these in manufacture and that was in the United Kingdom.

Subsequently, the Marine Corps developed its own design. Then the Marine Corps logistics command fabricated 53 of these systems to support the immediate need. In August, 2006, when requirement was increased to 407 systems, the Naval Surface Warfare Center, Panama City, Florida, developed a viable design lightweight mine roller and provided that concept to U.S. industry.

We now have two U.S. prime contractors producing these systems. To date, we have fielded 256 of that 407 requirement with another 74 in route to theater. These mine rollers have already proven their value by saving lives and preserving equipment. In effect, they absorb the blasts that were intended for our Marines in occupied vehicles.

Operations in Iraq and Afghanistan have highlighted the need to continually evolve our personal protective vest system. Therefore, beginning next month, we will start transitioning to the newly designed Modular Tactical Vest, or MTV. This vest is now in production, and even though it is virtually the same weight as its predecessor, the Outer Tactical Vest, or OTV, it is more easily integrated with our other personal protection systems. It also provides greater comfort through the incorporation of advanced load carriage techniques that distributes the combat load over the torso and onto the hips.

The MTV incorporates our existing Enhanced Small Arms Protective Inserts, or ESAPI, as well as side SAPI plates. These plates are provided to every Marine currently in the theater. They will also be provided to every Marine that deploys to the theater. ESAPI provides the best protection available against a wide variety of small armed threats, up to and including 7.62.

Finally, in February, the Marine Corps will begin fielding Flame Resistant Organizational Gear, sometimes referred to as FROG. We will provide this gear to all of our deployed Marines and those preparing to deploy. This life-saving ensemble of clothing items—gloves, balaclava, long-sleeved fire-resistant shirt, combat shirt, and combat trouser—is designed to mitigate the potential injuries our Marines face from flame exposure. These clothing items provide protection that is comparable to that of the Nomex combat vehicle crewman suit or flight suit.

With the mix of body armor undergarment and outerwear we have provided operational commanders, they can determine what equipment their Marines will employ based upon the mission requirements and the environmental conditions.

We have positioned ourselves to innovate and modify our equipment so that we can continue to meet the evolving threat. By working with our sister service and our Nation's manufacturing base, the Marine Corps continues to provide our Marines the best available equipment against known and anticipated threats. We take seriously our responsibility to protect our Marines, and we want you to know we are doing everything we can. With your continued support, we will continue to accomplish that mission.

In closing, I would like to introduce to you Sergeant Joseph Perez. Sergeant Perez is a decorated combat veteran who has two tours of duty in Iraq. His personal combat declarations include the Navy Cross, the Navy Marine Corps Combat, the Navy Marine Corps Commendation Medal with Combat V, the Purple Heart, and two Combat Action Ribbons.

I invited him along so that you can be provided an expert opinion of the equipment we are fielding to our warfighters. He has served in both Operation Iraqi Freedom I and Operation Iraqi Freedom II as a squad leader in Third Battalion 5 Marines.

He has available to him on the table a representative sample of the infantry combat load, much of which he wore during the assault in Fallujah. Also in that battle he wore the Outer Tactical Vest. Today, he has available to him the Modular Tactical Vest. It is designed with a quick-release cutaway system so that a Marine can rapidly egress from it should he find himself in water or needing to escape a vehicle. It also provides increased coverage particularly in the lower back; and, as I mentioned, it better distributes the load off of the shoulders onto the torso and hips.

He will remain after the formal hearing for anyone who would like to come down and take a look at the gear or try any of it on.

Again, I thank you for this opportunity to appear before you and look forward to providing any additional information that you require.

Mr. TAYLOR. Thank you, General.

[The prepared statement of General Brogan can be found in the Appendix on page 56.]

Mr. TAYLOR. I would like to, for the record, thank my colleague, Congressman Neil Abercrombie, who is the chairman for the Air and Land Subcommittee, for joining. He will be having a hearing of his own that will be classified on much of the same subjects at 4 o'clock in 2337. Thank you for being here.

We have been joined by Congresswoman Bordallo of Guam, and Congressman Ellsworth of Ohio.

On the Republican side, thank you, Mrs. Jo Ann Davis of the Tidewater area of Virginia, for joining us.

I would yield to my colleague from Maryland.

Mr. BARTLETT. Thank you.

Our witnesses were very generous with our time in a classified briefing. I asked a number of questions, and they answered them.

As you point out, the primary purpose of today's hearing is to assure our fellow countrymen, particularly our service members' families, that we are doing all that we can to meet the challenges for protection in this theater. I am convinced that we could not be moving more expeditiously. I want to thank our two witnesses for their service to their country and for really expediting the procurement of these protective systems.

As my custom is, Mr. Chairman, I generally yield my time to the lowest-ranking member on our side of the aisle. I thought I would be yielding to your side of the aisle, but Mrs. Davis has joined us, and I will yield my time to her.

Mr. TAYLOR. Mrs. Davis.

Mrs. DAVIS. Thank you, Mr. Chairman, and thank you, Generals Alles and Brogan, for being here today. And I apologize that I missed your testimony, General Alles. I am hoping that I don't ask a question that you already answered.

But, General Brogan, I understand that the current theater requirement for the MRAP is 1,022, with 538 Category I, 420 Category II and 64 Category III vehicles. With the approximately 4,000 more Marines that are supposed to deploy to Iraq as part of the President's new strategy, do you anticipate a need in an increase of these vehicles; and, if so, will the required funding be taken from the fiscal year 2007 bridge appropriation?

And, before you answer, I also understand that the contractor has had a problem with meeting the schedule with these vehicles in the past, and are you confident that the mistakes will not be repeated?

General BROGAN. Ma'am, there is an additional requirement of vehicles that is making its way through Marine Corps requirement command. I will expect that will take into account the plus-up forces that will likely be sent to theater.

As you indicated, there were some initial problems with that prime contractor when we started up. My experience in acquisition is that it is not that unusual for a new start production line. They now are actually producing ahead of schedule, so I am confident that they will be able to continue to produce vehicles.

As I mentioned, we are conducting a full and open competition to seek additional sources for the category of vehicles that you mentioned, Category I and Category II; and because of the Category III vehicles, the Buffalo, the heaviest and largest of these vehicles can be currently met by our contractor. We have not competed any of those, but the large quantities of Category I and Category II vehicles are being competed.

I must temper my comments because we are in the midst of source selection right now with that.

We did have a large number of potential offers. I met with Secretary Etter this morning, and I now have the approval to go forward and have discussions with those offers, and I expect to be on contract with a large number before the end of this month.

Our strategy will be to produce two vehicles from each vendor. We will take those vehicles up to the Aberdeen Test Center in Maryland and conduct two separate tests. The first will be a survivability test where we blow up the vehicle; the second will be a limited user evaluation to ensure that the handling characteristics, maneuverability and things like that meet the requirements our Marines and the other joint forces needs. And given that the offers meet those hurdles, then we have the ability to award Follow On production contracts and so then can follow up in producing these vehicles.

Mrs. DAVIS. I hope we get everything to our warfighters as soon as they need it and hopefully you will come back to this committee if you have any other problems. We want to make sure our Marines are protected and they have the best—that we have the best that you have to offer.

Mr. TAYLOR. General, a continual frustration for those of us who are trying to resolve problems is that we felt—I personally felt many times during Secretary Rumsfeld's tenure that we were not given the whole story, that we were often given a requirement or told a requirement was filled that was below 100 percent.

It started with body armor. We were told that the requirement had been filled, only to find out from the moms and dads of Guardsmen and Reservists they were issued the same body armor as the regular forces. Then it was the up-armorings of HUMMWVs, the requirement had been met, only to find out that was a small proportion of the vehicles operating on the roads of Iraq and Afghanistan.

So my question to you is, when you said your requirement, as Ms. Davis has correctly pointed out, that we have 23,000 Marines over there, we are getting ready to send an additional 4,000, will the additional requirement that you are talking about be enough vehicles so that every Marine who is traveling the roads of Iraq or Afghanistan is in the best possible vehicle?

General BROGAN. My sense is, sir, that our requirements have evolved over time. As I indicated in my oral statement, the first MRAP vehicles, being the JERRV and the Cougars that we procured, were primarily for EOD and combat engineers. Clearly, as the ossification of the threats increased, it is apparent that we need these vehicles for all of the forces that are involved in operations outside of the operating basis; and so that was the genesis of the 1,022 requirement that Congresswoman Davis mentioned.

I also indicated that MASDC is now looking at a larger number. It has not yet been delivered to me to go procure it. I believe that MASDC does its validation of this requirement. They will take into account the additional 4,000 Marines who will be fielded into theater, and that will be calculated into the new requirement.

So did we have it a hundred percent right the first time? No, sir. I believe we used the best numbers that we had available; and then, as the need for them increased, the warfighter came back through the urgent UNS process and JUONS to universal operational needs statement process and sought these additional vehicles.

Mr. TAYLOR. Last week, in a classified briefing, you gave me the target number of vehicles and you targeted a date of delivery.

General BROGAN. Yes, sir.

Mr. TAYLOR. To what extent can you inform this committee of the number of vehicles? Because in my mind's eye, I have trouble believing that this number should be classified. I would think the moms and dads, the loved ones of the Marines would like to know that you have a substantial number in mind, that you have what I think is a very realistic but also very aggressive target date in mind.

General BROGAN. Sir, I believe there is probably two parts. The first part is the requirement that has currently been levied on me is to procure 4,060 vehicles. That is for—that includes the 1,022 for the Marine Corps as well as vehicles for the United States Army and the United States Navy that is serving alongside of us. For the Navy, principally they are for EOD teams and Seabees. Now for the Army, they will be used as their force commanders see best.

The additional number is changing almost daily, sir.

Mr. TAYLOR. How about your target delivery date to get in the Marine Corps' hands, and then you explained to me that there is some additional work that is done by the Marine Corps before they are sent to theater. What is your target date for those vehicles? In your position, what is your target date to have them fielded in theater?

General BROGAN. As I indicated, I am not buying just for the Marine Corps. So that 4,060 vehicles—I have set a stretch goal for my team of the end of this year, 31 December, to have those vehicles delivered to the U.S. Government. It takes me approximately 60 days from that point to incorporate the jammers, the radios, the

Blue Force Tractor and, as we start delivering these vehicles in quantity, surface ship them into theater.

Right now, with the small quantities that we have been dealing with, we have been flying them into theater as soon as they are prepared. As these quantities increase, I suspect we will have to move to sea transportation in order to get the vehicles over there.

So I expect, from the time I get them, in my mind we will do the integration of the government-furnished equipment and transport them into theater in an additional 60 days. So my stretch goal, as I indicated to you last week, sir, is to deliver those 4,000 vehicles by the end of this year.

Mr. TAYLOR. General, one of the frustrations that this committee had with the up-arming of the HMMWVs was the length of time that it took. The goals were originally too small. And, as members of the staff and as members looked into it, it was disappointment after disappointment, that the steel manufacturers did not put that steel at the top of their list, that because the industry is pretty close to capacity they were just putting the normal routine; and apparently no one at the Department of Defense even bothered to call up the steel mills and say kids are dying. You can save many people lives with putting this at the top of the list.

We heard basically the same thing from the ballistic lab folks. No one said this is more important than life and death; this is more important than an office building in downtown Miami or something else.

To what extent have you researched the pitfalls on the Army acquisition plan and learned from their mistakes so that, when the first of January rolls around, that those 4,000 vehicles are ready to go and, quite frankly, in-house? Do you have the manpower and the crews available so that when the vehicles are delivered to you that that doesn't become a delay in getting them fielded?

General BROGAN. Sir, as to the first part of your question, we are working with Defense Contract Management Agency to go take a look at all of the subs and the vendors that were included in the proposals that came from industry. As my folks did, the Source Selection Evaluation Board, they looked at the relationships and interrelationships not only among the primes but also one tier below that at some of the vendors.

So there is some concern at overlapping capacity and whether or not they will all be able to meet what they laid out in their proposals as the quantities, and those quantities are what I base my projection on. We have available to us DX and DS ratings where we can implement a national security imperative, if you will, on industry and move to the head of the line so that government deliveries take precedence over anything else that would—that they may be manufacturing. That is available to us should it be required, and we have used it in a couple instances in some of the things that we have been delivering to theater.

So as DCMA takes a look at the capacity of the steel mills to provide the steel that would be required for test vehicles at the vendor base, at the part suppliers, we will look to determine whether or not we need to implement these DX and DS ratings. They are available to us by going up to the Office of Secretary of Defense and requesting them, sir.

Mr. TAYLOR. So, just for clarification, all of the funds that you need are there. Is there the appropriation? Is there—you know of no hurdles at this moment that this committee or the full committee or the appropriators need to address in order to make this happen?

General BROGAN. Sir, I have in hand moneys from the Marine Corps for the first 805 vehicles. The delta between the 805 and the 1,022 is included in our fiscal year 2007 full supplemental request. I have a portion of the Navy's money, and I have not yet received any money from the Army. We are working—the Secretary of the Navy is working with the Secretary of the Army to get those funds. They will probably have to come to you all with a reprogramming action to move money out of a current existing line. I believe they intended to fund it in their 2007 request, but I am not certain of that.

Mr. TAYLOR. Okay. I am going to formally request of you that information.

I would also like to remind the committee that Chairman Skelton has passed a new committee rule that we would get information 48 hours in advance. Because of the gravity of this situation, it was my call to have this hearing today because the Marines did not get 48 hours' notice. There was no way that we could have held them to that account. So we have agreed to provide all of the testimony by this Friday; and, hopefully, the request I just made of you will be included in that.

General BROGAN. Yes, sir.

Mr. TAYLOR. In the order that the members arrived, we will recognize Admiral Sestak from Pennsylvania.

Mr. SESTAK. My questions are really just more relying on what has already been brought up as you spoke about the asymmetric type of threat that we face. How many pounds of blasts are we seeing right now out there in Iraq, mine blasts, and what do you expect it to be?

General ALLES. I mean honestly, sir, it varies widely.

Mr. SESTAK. What is the maximum?

General ALLES. An average IED attack would be somewhere around 250 2-millimeter artillery rounds. They vary dramatically in size and what they use. Sometimes they are completely improvised explosives, meaning they use accelerants, propane, things like that. So there is no necessarily—if I were going to say there was a standard attack, it would be that 152-millimeter round, but they vary wildly. I have got a report—

Mr. SESTAK. So they are not getting larger? It just varies?

General ALLES. They are—no, as we have armored the vehicles more heavily, they are increasing the size of the IED so they will use more artillery rounds, C-4, TNT, whatever they use in that particular attack. So they have increased the size of the rounds.

But to try to give you a standard IED, that is part of the issue, sir. They are improvised.

Mr. SESTAK. The up-armor Hummer upgrade is for 12-pound mine blast. That is what it is good for?

General ALLES. I have to check the number.

Mr. SESTAK. Is the MRAP at least more than that?

General BROGAN. It is, sir.

Mr. SESTAK. Do you know what it is up to?

General BROGAN. I do, but I would rather not say in open hearing.

Mr. SESTAK. Is it going to take care of this increasing growth of what the mine blast—I mean, it is the lead/lag question.

General BROGAN. If your question, sir, is there a mine that can overcome an MRAP, yes, there is, but the V-shape hull does a great deal for us to disburse that blast as well as the fact that these vehicles are much higher above the ground. As you know, in an explosion, space is your friend, because it allows that wave to expand before it makes contact with the vehicle.

I would rather not in open session discuss the specifics of what those vehicles are designed to protect against.

General ALLES. I would make the comment it is counter-countermeasure. We feel the solution—they develop a countermeasure. We have to deliver another counter to that.

Mr. SESTAK. My overarching question would be, as you look back on nearly the last 4 years—and you have worked in groups throughout DOD, including ones headed by Mr. Wolfowitz, trying to address this issue—what is it from the warfighting policy side to the acquisition procurement side is the overarching lesson learned so that the lead/lag or the countermeasure, you know, counter-counter-counter can be done in a much more flexible way?

I mean, really watching this, it has always been great efforts, but you are right. It has always kind of seemed to have been watching it, watching to see their next step and—to some degree and then catching up. It is always back and forth. Is there anything for the speed or the procurement system, the acquisition way, that you would sit back and say, this is the lesson, we really should take care of this for the next type of asymmetric threat, General Alles, that you laid out so well?

General BROGAN. Sir, I would suggest that certainly there have been a lot of indications or items where we have been responding, but there are also several instances where, because of our intelligence systems, we were out ahead of them. But you are not going to read about those in the press because we are not going to publicize those times where we are proactive and out ahead and then tip our hand. So all that you ever hear about or read about are those times where we are purely in a reactive mode.

There are some things, sir, that I believe could help speed up some of the acquisition processes in particular. I believe last year the Congress provided two special operations command, something called combat mission needs funds. This was a pot of money provided to the commander and the acquisition executive in Special Operation Command that we were allowed to use very rapidly to respond to an emerging threat if something was available to fulfill it. A similar ability for the services would be very helpful.

Another area that could assist us is the below threshold reprogramming limits. They have not been changed in a number of years, and in some cases that affects our ability to move money back and forth into some of the areas of more urgent needs at the expense of some of our longer-term investment programs. So I would suggest or offer that you could all take a look at that.

General ALLES. Sir, I would offer also that on one important point is we need to maintain a close alignment with the operating forces. So one of the initiatives that we took from the warfighting lab was to put a counter-IED cell in Iraq which is composed of seven officers that actually work at the warfighting laboratory. That gives us a closer alignment between the operating forces and the requirements as they come to pass.

One of the issues that has come to the forefront is the issue of counter-sniper technology. We have actually been able to be in front of counter-snipers to a degree because we had money we invested in years past in counter-sniper technology based on what we were seeing from the operating forces and able to field some near-term solutions. It is not a panacea. It is helping, but, because of that close alignment, it has allowed us to respond more rapidly.

Mr. SESTAK. Thanks. I am up just about finished with my five minutes. I did not mean my comments to be critical. I mean, nobody does it better than the Marines.

General BROGAN. Thank you, sir.

Mr. SESTAK. And I mean that. It is just that it seems to me—and having watched it from both sides—what you can know on the inside and what you know on the outside is that there has been or there is really an effort to step back from this for the next inevitable conflict and what it really is to make sure that we have drawn the study, the execution for this acquisition system of ours we all critique and the tie to the warfighters so that some of the—one little bit of lead/lag is just too much. Has that been done yet?

General BROGAN. General Alles mentioned the lessons learned. We are attempting to capture those. I don't believe there has been a systematic review of the acquisition processes, sir.

He also mentioned the urgent universal needs statement. That is the method by which the operating forces identify an urgent requirement to the acquisition system. In order to help shorten that cycle time, I have placed a liaison officer with the MMEF so, as they begin to look up the urgent UNS, they can begin to let us know what our project officers and program managers need to begin looking at, seeing if there is anything available in industry that can immediately fulfill that need or, unfortunately, we have to embark upon a development effort, which takes much longer.

Mr. SESTAK. Thank you very much. And, you know, these great things you do as you go along, if they were institutionalized in the lessons learned, it would be good. Thank you, sirs, for your time.

Mr. TAYLOR. Thank you, Admiral.

Something I should have mentioned, particularly for the newer members, what we have found, sadly, in Iraq is that a disproportionate legion of the casualties are of mines and IEDs and a disproportionately high number of those have occurred on trucks and HMMWVs. So, although the HMMWV is the most common vehicle in the American inventory, there is still a disproportionate percentage of the death in and amputations that have resulted from attacks on them and that purpose of this is to try to solve that problem for our Nation to move on.

Since our enemies talk to each other either face to face or over the Internet, attacks in Iraq are again to be seen in Afghanistan or someplace else in the world. So this is an attempt in this com-

mittee to—we are aware of a problem which we are trying to solve it.

Having said that, I want to recognize the gentleman—we do this a little bit out of order since we don't have many Republicans. We want to be fair. Mr. Wilson from South Carolina is recognized.

Mr. WILSON. Thank you for being here today. I am very grateful.

I represent Parris Island; and, General Alles, I noted with interest that you served at the Marine Air Station in Beaufort. We really appreciate the impact of the Navy and Marines to the communities that I represent.

I am particularly interested in the Cougar and Buffalo. And I apologize that I was late. But I have even had the privilege of visiting the manufacturing sites of these particular vehicles, and—you touched on it; it may be repetitious—I would like for you to review what has been the record of these two particular vehicles and, in particular—I know you touched on it a moment ago, but I would like to hear it again and the unique V shape and how that has such a positive impact.

General BROGAN. Yes, sir. The V-shaped hull is designed to force the blast off to the side, away from the embarked spaces in the vehicle, and the fact that the vehicles sit up high provides space so that that blast can form and get larger and not have as much impact on the hull of the vehicle.

The two vehicles that you mentioned, the Cougar and the Buffalo, are both serving very well in theater right now. We have not had a single Marine fatality in either one of those two vehicles. Against the blast, shrapnel, effects of both IEDs and mines, they are doing a tremendous job. So that is why we have the imperative to get these vehicles into theater.

General ALLES. I would just remark, sir, that that vehicle, these V-shaped vehicles, which goes beyond just the Cougar and Buffalo, account for 14 percent of our taxes, but only 3 and a half percent of our casualties. So they are very mine-resistant vehicles which are behind the impetus to move toward them.

Mr. WILSON. They are also very intimidating to the enemy. To see the vehicle is awesome, and so it has to be very assuring to Iraqi allies and intimidating to persons opposed to us.

And I know, again, that this has been mentioned, and I appreciate the question from the chairman a moment ago, but we can assure family members that the Marines who deployed, the Marines to be deployed, that they do have those in a combat role, have up-armor vehicles in totality; is that correct?

General BROGAN. They have up-armor vehicles yes, sir. The majority of those are up-armor HMMWVs. This effort is to increase the density of these V-shaped hull vehicles in the operating forces.

Mr. WILSON. As an indication of my appreciation of what you are doing, I am wearing a wristband today for a Marine who is serving on—a Naval academy graduate currently in Iraq, and so I wanted to thank you for your service. I want to thank the young people who are protecting our families.

And I yield my time.

Mr. TAYLOR. Thank you, Mr. Wilson.

The Chair now recognizes Mr. Courtney from Connecticut.

Mr. COURTNEY. Thank you, Mr. Chairman.

Thank you for sharing with us your experience and time here today.

I want to go back to Congresswoman Davis' question, because I was trying to follow the answer, General Brogan, in terms of just the timing, of making sure that this new surge of troops is going to be protected with the best armor possible.

The Baltimore Sun actually had a story a few days ago which indicated that, in fact, two brigades are being sent over without having these up-armor or strengthened, toughened vehicles available to them. Senator Dodd from my state, I know, has sent a letter to Secretary Gates inquiring about whether or not that shortcoming is, in fact, the situation for the people who are—the new troops that are being sent over to Baghdad.

And just listening to your description of the sequence of the procurement, I mean, it did sound like if people are moving over there even today, which most news accounts seem to indicate, it is hard to see how those vehicles are going to catch up to them.

General BROGAN. Sir, these vehicles will not arrive before the troops. The need for these vehicles is greater now than it was when we first received the requirement. As I indicated, requirement has increased from the first deployments that we made just for EOD and combat engineers to now a much wider need for these vehicles for all troops that are involved in patrolling.

It is the policy—it is my understanding it is the policy of the operation by commanders in theater that no Marine goes outside the wire unless he is in an up-armor vehicle. That could be a HMMWV or an MTVR, but they are not going outside the wire in those vehicles, and I am fairly confident that that requirement, that structure will remain in place even for these additional troops.

The folks in Installations Logistics at Headquarters Marine Corps are looking at how we will meet this plus-up troop deployment with the equipment that we have on hand. There will be some cross-leveling of gear that is currently in theater. There will be some additional deployment of gear that is at home stations. But we don't want to completely strip away our training base because these vehicles handle differently than the unarmored version, and we want to make sure our Marines, as they go through Mohave Viper out of Twentynine Palms, are familiar with the handling characteristics so we avoid needless accidents in theater that could injure or kill marines.

It is my understanding that operational commanders are ready to execute this cross-leveling so that all of the Marines who operate outside of the forward operating bases (FOBs) will, in fact, have up-armor vehicles. It is then incumbent upon me and my staff to deliver as rapidly as possible these MRAP vehicles as they come off the production lines.

Mr. COURTNEY. Thank you. I didn't mean to suggest there was any shortcoming, and it is obvious you are doing everything you can to make sure our guys are protected and to make sure our men and women are protected.

Another question I have which is an issue that seemed to be out there in the public realm over the last couple of years or so which is about families who are trying to use their own resources to get their family members body armor that otherwise might not have

been available. I know legislation was passed to provide for reimbursement for those families, and it seemed that there was difficulty trying to figure out how to get those payments where they—I wondered if you could give me a quick sort of update, and I apologize not knowing the latest on that information.

General BROGAN. And I can only speak from a limited knowledge standpoint from the Marine Corps. What I have been told is that we had very few cases of that in the Marine Corps that are in fact providing all of our folks with the ESAPI, with the side SAPI plates as well as the quad guards and the other pieces of the personal protective ensemble and then the commanders tailor what they wear to the specifics of the mission. To my knowledge, there has not been a problem with that in the Marine Corps.

General ALLES. We don't know the exact numbers of what has been applied for for reimbursements. We have taken that for the record, and we can get back to you.

Mr. COURTNEY. I would appreciate that.

Mr. TAYLOR. Thank you, Mr. Courtney.

[The information referred to can be found in the Appendix beginning on page 77.]

Mr. TAYLOR. Next in the new order would be Ms. Bordallo from Guam.

Ms. BORDALLO. Thank you, Mr. Chairman; and I want to say it is a privilege and honor to return to this subcommittee and to serve under Chairman Taylor and Ranking Member Bartlett.

Generals, thank you for being here today; and I do have a couple of questions.

The Marine Corps has a special place in Guam's heart, and I represent Guam. They liberated us, and they are returning, 8 to 10,000 of them from Okinawa to Guam, in the next few years. So we are all very excited about that.

I have been to Iraq many times, and I appreciate the challenges that our Marines face in theater, and I also have seen much of the new upgraded equipment. It has been explained to us while we are over there in theater. And, as you might suspect, since I represent Guam, I have seen Marines conducting many training operations in the Pacific; and I do not want to stray far away from our primary focus today and that is the protection of our Marines serving in Iraq and Afghanistan.

However, I do, at times, worry about what implications our current actions have on future operations. That is whether we are creating tunnel vision on current operations to the exclusion of potential future operations in other areas, the Pacific, and let us mention North Korea here. Can you discuss how the existing fielding procedures incorporate the full spectrum of Marine operations, including amphibious operations, and whether the Marine equipment development procedures have taken into account missions that are unique to the Marines?

Whichever one of you would like to answer that.

General BROGAN. Yes, ma'am. I believe our focus, main effort, right now is certainly equipping the troops that are, number one, in theater and those that are preparing to go next, the ones that are in the training pipeline. With General Conway becoming the commandant of the Marine Corps, he has set about institutionally

refocusing on all of the challenges that we potentially face and ensuring that we remain relevant as Marine ground task forces, not just as fighters in the realm of counterinsurgency, the area in which we find ourselves today.

The urgent UNS process, the joint universal operational re-extending process that we use very frequently to equip our Marines in theater, has that focus, the Marines in theater. But our ongoing programs of record are designed to equip the entire Marine Corps for the entire conflict, not just for counterinsurgency. I don't think we have completely taken our eye off the ball, ma'am, but we are facing one direction more than the other.

Ms. BORDALLO. I know the situation is very serious today in Iraq and Afghanistan, but it seems that you never know where anything is going to erupt in the world.

General ALLES. Ma'am, I think you have seen from the commandant's planning guidance he is concerned about the turnaround ratios, we call them, for our operating forces. In some cases, they are low, one-to-one, for certain of our operating forces; and one of his objectives is to get those turnaround ratios raised to allow us to keep our focuses on the areas of the world that we need them. That has been very explicit in his guidance. It is critical how we do our training in being prepared for where the Nation calls us to serve.

Ms. BORDALLO. Thank you very much, and I am pleased to hear that.

My second question is, in a hypothetical world, if you could pick a single technology under development today to be completed and fielded to all Marines in combat tomorrow, what is that single technology and why? In other words, what is the most important technology or item that you have in development that will save lives in the current combat theaters and in the future?

General BROGAN. I think perhaps, ma'am, for that technology that we have in our hands right now, getting the MRAPs into theater as rapidly as possible will save lives. But, frankly, if we were able to develop a system that would pre-detonate an improvised explosive device, blow them up out ahead of our vehicles, blow them up while they are being planned, then that would go the furthest in protecting our folks.

General ALLES. I would make the comment that there are a number of efforts that are under way. They are classified efforts. I think it would be beneficial for the subcommittee to hear about those efforts. We gave some to the professional staff members when we met with Congressman Bartlett and Taylor last week. But, as with General Brogan, that would be a game-changing technology to pre-detonate IEDs.

Ms. BORDALLO. Thank you very much. Thank you for your service to our country.

Mr. TAYLOR. Again, in the order that they got here, would be Congressman Ellsworth from Ohio.

Mr. ELLSWORTH. Indiana. We are pretty close.

Mr. TAYLOR. I apologize.

Mr. ELLSWORTH. Not at all. Ohio is a great state.

Thank you for your service and everything.

Mr. TAYLOR. Congressman, can I interrupt? We are going to vary again, since we did not have—we gave the Marines very short notice, turns out that Sergeant Joseph Perez, who is the recipient of the Navy Cross, two tours in Iraq, has agreed to make himself available for questions. We are proud of our Admirals. We are proud of our Colonels. As a former enlisted guy, I will tell you I am of the opinion that we appreciate the officer corp, but they do not have a monopoly on everything.

If you would, we can find you a chair. We are going to put you up at the panel and make you available for whatever questions that the members may have and given. Thank you for your service, and thank you very much for making yourself available to this committee on such extremely short notice. We are honored to have you here.

Mr. ELLSWORTH. Thank you, Mr. Chairman. This may be the appropriate time for this, because Mr. Perez might be the appropriate person to ask this.

In my experience with wearing a vest, I know that a lot of times my officers would improvise on their own when things were not comfortable, and when they did not fit exactly right, they would do things on their own, cut little Vs out here to make them more comfortable. And I was going to ask him, and perhaps you will be the best one to answer this, what kind of feedback—because short of sewing somebody into a Kevlar blanket, there are going to be crevices, and I know that you have to be able to move, you know, everything to get around and to do your job.

What is the feeling of the new technology, the new pads, and do you find your people having to do that? Is that against orders? I assume that destroying government property and improvising may be, but are you finding where you can do your job in the new, and what kind of feedback are you getting with the new equipment, personal vests, I guess?

Sergeant PEREZ. All of the old gear is mainly the stuff that I wore whenever I was in Iraq. It put a lot of stress on the shoulders, and like you said, people would modify their vests to fit them, because if you are out on a 4-hour patrol and your back hurts, you are not very conscious of what is going on around you.

This new vest that we have, the modular tactical vest, is a lot more supportive only because it distributes the weight throughout the body. It is very new, but from what I have seen, I have actually put it on with the full load on, and it distributes a lot better. I feel like I can patrol a lot longer. I would be a little bit more happy with the outcome of a four-hour patrol in the sun in that vest as opposed to the other.

Some of the upgrades that they have added to it is the side protection is now sewn on the inside, and it is hugging to the body; whereas, the other one was more out and pushed your arms out. The mobility in your arm movement was restricted due to the placement of the vest—or of the side armor. You were not able to get a proper shooting platform while using the other vest.

So I think, you know, in the short time that I have been in the Marine Corps, the gear has progressed very rapidly. I came in with ALICE Packs that were made out of metal and horrible cloth, and now we have all kinds of stuff that is ergonomically correct, and

it is helping. So I do believe that we are taking a step in the right direction.

Mr. ELLSWORTH. Are any of the panels—and I am sorry I was late. You may have shown this—able to be removed where, if you do not need the neck pad, you can pull that off of Velcro and replace them depending on the situation you are going into?

Sergeant PEREZ. What I had encountered when I was in the operating force is most of the commanders dictate what you are going to wear. You know, the mission of whatever you are going out to accomplish dictates what you are going to wear for that mission. So, yes, it is removable, but for the most part you are going to wear most of it all the time due to the IED threat.

Mr. ELLSWORTH. Thank you.

And I guess my second and last question, unless I think of something else, would be, General—I think that you may have answered this and do not want you to go into anything that, you know, would be classified. Certainly the ability to blow these IEDs up before we get—especially when they are being planted would be a good time, in my book, but are there other things that we are doing correctly—and I heard General Alles talk about some of these are mortar rounds; some are, you know, other materials. Are there things you can talk about proactively that we are doing—now, I think back to stopping the war on methamphetamine, that we are regulating pseudoephedrine.

Are there things that we are doing in theater to control/seize on end before it becomes a bomb, controlling the fertilizer, controlling the fuel, whatever it is they are making these bombs out of? And like I said, if it is classified, just let me know, and I will catch it later.

General ALLES. Sir, honestly, a lot of it is classified, but there are efforts to reduce caches when we find them. That is a source of IED material on the part of insurgents. There are efforts to pattern-analyze how the IEDs occur as we go after bombmakers and the like. A lot of the details are going to be classified, but we do want to interrupt the kill chain. In the emphasis to interrupt the kill chain before the blast occurs, armor and the like is effective, but it is occurring at the moment of the blast.

So I would agree that we can go after the networks and the materials that they are utilizing in those networks. We are aggressively doing that. There are a number of classified programs against, which would have to be briefed in a closed session, which are helpful in those areas. Again, it is not a panacea, but a many-pronged effort to get at the IED problem.

General BROGAN. If I might, sir, before we leave the MTV—and as the Chairman indicated, officers do not have a lock on all of the good ideas. What we did is interview the marines as they were coming out of theater in both I MEF and II MEF. What were their concerns with the OTV? What were the problems they had with it? And that led directly to the MTV. After we found out what their issues were, it had to do with weight distribution, with comfort, with having the side SAPI plates integrated into the system, with being able to rapidly egress if they find themselves in water.

What we did then is held an industry day. Eighteen vendors participated. We down-selected that to six, and then we took those six

vests down to Camp Lejeune and let 30 marines wear all of them. If I recall correctly, 89 percent of them selected what has become MTV.

So we do try to take the input of those enlisted marines, the folks who actually wear the equipment day in and day out, and include that in our design process.

Mr. ELLSWORTH. Thank you very much, Mr. Chairman.

Mr. TAYLOR. Again, my apologies, and I will not make that mistake again.

Sergeant, again, I want to tell you how much I appreciate your making yourself available for this. The generals have had a few days to prepare. You have had 20 seconds, and to be in the presence of the recipient of a Navy Cross and someone who has done as much as you have, I want to tell you I appreciate your making yourself available.

And before I recognize the gentleman from Hawaii, since the generals have had an opportunity to make an opening statement—and I know I am putting you on the spot, but it is not every marine who is going to get a chance to talk to a bunch of Congressmen, and given this opportunity, if there is something that either the generals have missed or we have missed as far as the needs of the individual marines, something that is out there, something that has been developed or has not been developed that we need to be looking for, I would welcome your thoughts on that.

Sergeant PEREZ. I think when—you know, a lot of the guys that are operating on the ground, the infantrymen that are actually patrolling, you know, the cities by foot or by mobile patrols in HMMWVs or in some of the other vehicles, I think a lot of emphasis is being put on, you know, hey—like they said before, we cannot wrap ourselves in Kevlar blankets. A lot of this gear is great, a lot of it is very hindering, and just because you have a piece of Kevlar on every single inch of your body does not mean that I am more effective on the battlefield. I need to be able to shoot, move and communicate, and if I cannot move, all of that protection that you have given me now just made me a sitting duck, and it is pointless for me to have it on anyway. So I guess, you know, if you could, keep in mind that we do like better gear, but it is not necessarily to be fully protected 100 percent all the time.

Mr. TAYLOR. As a follow-up, is there anything that we, as a Nation, are buying that you think is poorly spent money? Is there anything that you see out there that we are not buying that you are aware of that we should be?

Sergeant PEREZ. I am not really aware of those types of things, sir. The only thing that I see is, you know, on the squad level, hey, what are my marines needing and what—you know, and for the most part, the Marine Corps has—as a squad leader, when I came back from Fallujah, I sat down for three days and did after-action reports with my fellow squad leaders and platoon commander, and that was, I am assuming, turned—you know, given to higher, and they, in turn, turned it in to higher, and it has turned into what it is now, you know, us getting better gear. So, like I said, in the short time that I have been in the Marine Corps, the gear progression has been very rapid.

Mr. TAYLOR. This could be the ultimate after-action report as far as getting your desires on the record, and so I want to give you that opportunity. Again, we are never going to tell you how to take a hill. We do buy—at the end of the day, we are responsible for buying the things you need, and that is why I am asking you this question.

Sergeant PEREZ. I mean, just put more ammo in our pockets, and, you know, give us enough water to survive for a couple days, and we are good to roll.

Mr. TAYLOR. I now yield to the Chairman of the Air and Land Forces Subcommittee, the gentleman from Hawaii, Mr. Abercrombie.

Mr. ABERCROMBIE. Thank you, Mr. Chairman.

Sergeant, if you happen to think of something or want to comment on something as we go along, please feel free to do so. Can I ask both generals and perhaps the sergeant, too?

Because some of the phraseology and the acronyms that we use are familiar to us, they may not be familiar to the audience at large, and the hearing is being broadcast out there, if it does not bother you too much, even though it may sound repetitious and something that takes more time than it should, I think we need to say what it is we are talking about. If you are talking about a Modular Tactical Vest, I think we need to say it, if it is okay with you folks. You are not going to hurt our feelings, is what I am driving at, if you say it out specifically each time because there are literally, probably, thousands of people who may be tuning in who simply do not know what we are talking about, and they are all interested. That is why they are tuned in. That is for sure. Is that okay? You will not hurt anybody's feelings.

General BROGAN. I will try to remember, sir. It is a bad habit we get into.

Mr. ABERCROMBIE. Oh, no. It is a good habit, actually. I mean, it moves things along, and a lot of times, in discussion, when we go to the classified hearing, obviously you do not have to keep on doing that kind of thing, but that is the only thing.

General BROGAN. Aye, sir.

Mr. ABERCROMBIE. Besides, if you are in front of me in hearings that I have, I am going to ask everybody to do that anyway.

Most of the questions I have will have to wait, General Alles, for the classified side of things that you have already mentioned. There is simply too much to go into that would require us to keep saying that, but I want to make sure that I understand that some of the logistics involved with whatever is evolving, including the rapid progression of useful equipment to the sergeant and to the people under his command.

When you used the—General Brogan, when you used the term or used the number 4,060, was that the total number of vehicles; or when we are talking about not the equipment but, rather, the up-armor HMMWVs or the V-hull or whatever we are talking about here, was that the total number, did I understand that correctly, of what you are shooting for in the next year?

General BROGAN. The 4,060, sir, is the total number of Mine Resistant Ambush Protected, or MRAP, Vehicles that I intend to procure, that I have authority to procure right now. Yes, sir.

Mr. ABERCROMBIE. Good. What is that in relation to the Cougar Vehicles, the Rapid Response Vehicles?

General BROGAN. Sir, the Cougar and the Joint Explosive Ordinance Disposal Team Rapid Response Vehicle, those are examples of a Category II, which is a Mine Resistant Ambush Protected Vehicle. So we have broken them into classes. Category I—

Mr. ABERCROMBIE. Does the 4,000 include those kinds of vehicles?

General BROGAN. It does, sir.

Mr. ABERCROMBIE. That is your total number—

General BROGAN. That is correct, sir.

Mr. ABERCROMBIE [continuing]. Regardless of the various acronyms and the various vehicles that we are talking about?

General BROGAN. Yes, sir. That is correct.

Mr. ABERCROMBIE. We are talking about vehicles that can be used for like carrying weapons or something, the MTRV, the Medium Tactical Vehicle, right?

General BROGAN. The Medium Tactical Vehicle is primarily—

Mr. ABERCROMBIE. Is that part of the 4,000?

General BROGAN. It is not.

Mr. ABERCROMBIE. It is not. What are we looking at there?

General BROGAN. I do not know off the top of my head, but the numbers are on the chromium table, but we have met the acquisition objective for those vehicles.

Mr. ABERCROMBIE. Okay. The reason I am asking the question about numbers is not to trap you into numbers, but to try and figure out a clear direction for the Congress. This is for our benefit to help you.

What is the relationship of the—these are all replacements. That is what I am trying to get at. Do you have the full complement of vehicles now in all categories? If you do, what is the relationship of the 4,060 to that? If you do not have the full complement now of vehicles in all categories, what does it take to have that to bring you up to the standards you would have liked to have had and then relate that to the replacement progression?

General BROGAN. Sir.

Mr. ABERCROMBIE. Am I clear?

General BROGAN. I believe so, but let me try to make sure that I understand your question.

We have a certain number of up-armor HMMWVs in theater now. A portion of those are theater-provided equipment. They belong to the commander of the land force component. They provide some of those to the Marine Corps. As I field brand new M1114s, which is the designation for an up-armor HMMWV, off of the assembly line, that commander in the field can then give back some of that theater-provided equipment to the joint commander.

Mr. ABERCROMBIE. Got it.

General BROGAN. So I am still fielding up-armor HMMWVs into theater.

Mr. ABERCROMBIE. Okay. But when you are just talking about the commander in the field, does that include the Army? Are we talking about the Army and the Marines together in terms of vehicle provision, the provision of vehicles needed for the various missions assigned?

General BROGAN. Sir, I would not presume to speak for the Army, but, yes, both of us are still fielding—

Mr. ABERCROMBIE. And that is the goal?

General BROGAN. I am sorry, sir?

Mr. ABERCROMBIE. The goal is to have that—

General BROGAN. Absolutely.

Mr. ABERCROMBIE [continuing]. Complement because the Marines and the Army have to work together in ops especially.

General BROGAN. Absolutely. The Army is the service that is in charge of the procurement of the HMMWVs.

Mr. ABERCROMBIE. Right.

General BROGAN. I get a portion of the new deliveries to field to Marine forces.

Mr. ABERCROMBIE. Right.

General BROGAN. I believe at the heart of your question, though, is whether or not the MRAP, the Mine Resistant Ambush Protected Vehicle, is intended to replace on a one-for-one basis all of the HMMWVs in theater, and the answer to that is no. The unit commanders have indicated to us that there are some places where, because of the imposing size of the Mine Resistant Ambush Protected Vehicles, they just cannot take them, so there will remain a need for some quantity of up-armor HMMWVs.

Mr. ABERCROMBIE. Does that include—do the numbers you are speaking of in the process that you are outlining here include equipment that would have come with the National Guard units or Reserve units in terms of their being deployed and bringing equipment with them?

General BROGAN. Sir, right now, in the Marine Corps zones in Multinational Force West, our equipment is remaining in place, and the troops are rotating in and out, so the troops rotate in and fall in on that equipment. Whether it is an Active battalion or a Reserve battalion makes no difference.

Mr. ABERCROMBIE. And it falls into that equipment whether the equipment is usable or not, right?

General BROGAN. Sir, we have in place a method by which we replace the gear as it is either destroyed or worn out. The Marine Corps Logistics Command has placed in theater a pool of assets that they call Forward In Stores from which commanders can draw replacement items, and then I alluded to that theater-provided equipment pool that belongs to the joint commander. So those are available to ensure that we do not have equipment shortfalls for the folks that are in the operating forces.

Mr. ABERCROMBIE. Well, I have seen that, and that is why I am asking this question. Last year we had been through this. Some of us had the opportunity to see that, and I am very impressed with it—do not get me wrong there—but it became very difficult for me to understand how you could keep that up no matter how good the sergeant and his folks are at the level of repair and maintenance in theater and so on. Just the sheer pressure of deployment now seems to me to be putting a strain there.

General BROGAN. Sir, I think you are absolutely right. There is no question that the operations in Iraq are using up equipment at a much higher rate than we would have seen in a peacetime environment.

Mr. ABERCROMBIE. The reason then—let me just go a bit further. Again, I am not trying to lead you into anything. I am trying to get a clear understanding of what we need to do now, if you would just indulge me a moment more, Mr. Chairman. Again, I want to make sure I have it correct, that the committee has it correct. December 31st is, you feel—am I correct that the 4,000 vehicles—given the explanations you just outlined, December 31st is your goal for having these vehicles in all categories manufactured or available up to the up-armoring, if you will, like jammers, et cetera?

General BROGAN. After they are manufactured so that I, as the Government, have taken possession of them, and then I need that additional 60 days to install—

Mr. ABERCROMBIE. Now, they are not all going to appear at once?

General BROGAN. No, sir.

Mr. ABERCROMBIE. How many would you say a month are coming—

General BROGAN. Sir, because I am still in source selection—

Mr. ABERCROMBIE [continuing]. Or is that classified?

General BROGAN. It is not classified, but it is competition-sensitive.

Mr. ABERCROMBIE. It is what?

General BROGAN. Competition-sensitive.

Mr. ABERCROMBIE. Well, I want to know something, but I will not get into it with you, but then we are going to have to have a talk with the Secretary of the Navy or something. I could care less about that. Now, if that means you have got to pick something—I put my trust in you. I went over your background here, and, General Alles, you have got the people here. This is your “kulean,” as we say in Hawaii. This is your area, right—

General ALLES. Yes, sir.

Mr. ABERCROMBIE [continuing]. That you have to deal with.

I will tell you what I am sensitive to. I am sensitive to somebody who is worried about whether he is going to make more money than somebody else out of this and that that holds things up. I could care less. That is a policy question.

General BROGAN. If I may, sir, part of my intent is to use competition as a lever and to encourage them to increase their production capacity.

Mr. ABERCROMBIE. I understand that. From what I have seen or from what I am aware of, this competition, especially some of the things we are talking about—that has been gone through already. You know what you want.

General BROGAN. I know the characteristics of what it is I want. Absolutely, sir.

Mr. ABERCROMBIE. Well, I am very concerned—and the last point of this: Are you getting enough vehicles in all categories to accommodate whatever is going to take place with this so-called “surge” in terms of the influx of new brigades, new squads as it comes down to—is that something we can talk about now?

General ALLES. Sir, if I could comment on the requirement, because I think there may be some confusion here. Right now, for MRAP Vehicles, the Marine Corps’ requirement is 1,022. We expect that number to triple in the next few weeks.

Mr. ABERCROMBIE. Yes.

General ALLES. There is a new requirement being worked that will triple that amount of vehicles.

Back to Chairman Taylor's question about HMMWV replacements—

Mr. ABERCROMBIE. That is why I am asking the question.

General ALLES [continuing]. That would be enough for the HMMWVs I am aware of that we have in theater. Whether the commanders choose to use those or not is an operational decision, not our decision.

The other thing to specify is that—sorry. Right. The other thing to specify is that they are already working numbers. You mentioned the additional marines for units that will surge into theater so that we have vehicles for those marines also; MRAP vehicles I am talking about. They are also including those numbers in that plus-up that we expect to see in the next few weeks. It is working its way through our process in the Marine Corps to be validated by a Marine requirements oversight committee. I should also point out that additional funding to buy those vehicles will be required.

Now, General Brogan mentioned what he already has funding on hand for when we increase the amounts of vehicles to these higher number requirements—triple the amount is the rough number we are using right now—we will have to work on reprogramming monies to pay for those.

Mr. ABERCROMBIE. Has that money come out of the previous supplementals that has not been spent?

General ALLES. Sir, I honestly could not answer that.

General BROGAN. Sir, I would anticipate that that additional requirement will be included in the fiscal year 2008 supplemental request. Because I will be in production of those first 4,000 vehicles, even if you gave me the money in 2007, I would be unable to spend it—

Mr. ABERCROMBIE. I understand that. That is why I am asking the question. I realize the restrictions of time, but we have to get through this in order to—

General BROGAN [continuing]. But the beauty, I believe, sir—

Mr. ABERCROMBIE [continuing]. Figure out what to do. Otherwise we are off in some kind of charade, and both the forces under your command and the American public are going to be misled as to what is taking place, and we will not be doing what is required of us to support you.

General BROGAN. Yes, sir.

Mr. ABERCROMBIE. It is easy to talk about supporting the troops. It is another thing entirely to do it in the context of the legislative obligations that we have.

General BROGAN. Sir.

Mr. ABERCROMBIE. So the answer I am getting from you is that you think you can handle it in terms of the numbers that will be required over the next 6 weeks to 6 months.

General BROGAN. Yes—

Mr. ABERCROMBIE. Am I correct, General Alles?

General BROGAN [continuing]. Because I think the beauty is, once we have that production base established, then we can keep

it running and continue to turn out these vehicles to meet the requirements of the operating forces.

Mr. ABERCROMBIE. So equipment support will not be an issue in this surge?

General ALLES. For the Marine Corps. It will require some cross-leveling of equipment, but I do not see that as an issue. They can work that, sir.

Mr. ABERCROMBIE. I presume you are working with the Army on this, and they are going to be involved in this. It has got to be done together. I am not quite sure when you say, "For the Marine Corps."

General ALLES. I am not aware of what the Army requirements are, sir.

Mr. ABERCROMBIE. Well, we have got to start talking to one another about it. I have got—because Chairman Taylor and I have to make the recommendations together on this.

General BROGAN. I understand, sir. Unfortunately, we do not have the knowledge available to answer your question about the Army's requirements.

Mr. ABERCROMBIE. Well, if Representative Taylor and I can talk, do you suppose you might be able to talk with your Army counterparts?

General BROGAN. Sir, that is being done—

Mr. ABERCROMBIE. Okay.

General BROGAN [continuing]. Just not by the two of us.

Mr. ABERCROMBIE. Okay. Well, you understand where we are going and what we need to have. We have to have from the Army and from you whether or not we need to do some changes. And the final thing I want to say on that, Mr. Chairman, is we need to think about—I do not know—remobilization, total mobilization. It is no secret to members of this committee and probably to some of the folks that I have worked with over the years here, I was opposed to this from the get-go, but what I am more opposed to is other people letting other people take the responsibility and make all the sacrifices.

It is impossible for me to understand how you cannot command mobilization. If you need these vehicles, they have to be built, and that means if they have to shove some trucks to be sold to some idiot watching the Super Bowl commercial, then that is what has to be done. So we need to know what you need to have, and if that requires us then to even take legislative activity and make sure you get what you need, then that needs to be done. I do not think we can fight this thing on the side—

General BROGAN. Sir, I appreciate your—

Mr. ABERCROMBIE [continuing]. As a side issue.

General BROGAN. And I also appreciate your offer for us to come back to you if we need your assistance.

Mr. ABERCROMBIE. Okay.

Thank you very much, Mr. Chairman.

Mr. TAYLOR. Thank you, Mr. Abercrombie, and, Generals, since the Gentleman from Hawaii used the word "we" in several statements, we want to make it very clear. This is for the troops. If we get angry, it is going to be at industry and not at you. It is going to be that you did not challenge us enough.

So we want to work with you on this. We want to expedite the fielding of the equipment that you need. We saw mistakes with the up-armoring of the HMMWVs. We do not want to see those mistakes made again, and we want to work with you to make sure that that doesn't happen.

For the newer Members, what you will find is that, in the good times and times of feast, you will be scrambling for programs that are important, some things that may be made in your district that you think we need for times of war, and we talk about preserving the industrial base, and all of us have done it from time to time. I have served in as much, if not more, than most, but the reason we go to bat for the industrial base in times of peace is so that it will be there when we need them, and that is why a lot of us get very disappointed when our industrial base lets us down in times of war where they do not make the needs of the warfighter a priority, and that mistake was made again repeatedly with the up-armoring of the HMMWVs.

The purpose of this hearing and hopefully of other hearings is that we do not make that mistake again, that the industrial base that we have fought to preserve, that have made in America laws that we have preserved so that we can be self-dependent on our own weapons serve—that those things are there to serve us in times of need, and this is a time of need.

I would now like to yield to the Gentleman from Maryland Mr. Bartlett.

Mr. BARTLETT. Thank you.

As I mentioned earlier, within the limits of the system, I am convinced that you are moving as expeditiously as possible to identify this need and to procure the appropriate equipment. What I would like to ask you to do with your knowledge of the system is I would like to ask you to take off your uniform; imagine you have a loved one in harm's way over there. What could we have done better? What do we need to change so that we can speed up the sequence of events?

General ALLES. I will go first.

Sir, one of the things that is of concern is we have to reprogram money frequently, and that, you know, is an emergent requirement. We are facing an adaptive enemy, and that enemy is changing. As he changes, we have to counter his counters, and that typically requires some form of new programs.

As we have worked with the Joint IED Organization, we have noticed that they have a tremendous amount of flexibility in their appropriation. That appropriation allows them basically to put the money to whether it is acquisition or research at the time they are going to execute that, and that kind of flexibility would be very useful to the Marine Corps in the execution of our Title 10 responsibilities.

There are other things that could be done, but that is one that comes to mind off the top of my head that would be helpful, and also accelerate the process, because there is always at least somewhat of a time delay as you work through reprogramming actions.

Mr. BARTLETT. What you are telling us is that, at least to some extent, the availability of funds has limited how rapidly you could proceed.

General ALLES. To some degree, yes, sir, it does. I mean, again, I would not so much say "availability" as that they are in the correct, you know, program element or correct appropriation line.

Mr. BARTLETT. I understand, but availability to you. They may be there, but not available to you.

General ALLES. Yes, sir.

Mr. BARTLETT. Okay. Okay.

Mr. Chairman, that is something we ought to be able to change, I would think.

Mr. TAYLOR. I would hope so, and again, I will reiterate my request for you that, as to any funding needs that you see for this program to see that your target date of January 1 is met, any messages that we need to pass on to the appropriators for the supplemental, we have made the request. You are off the hook, as far as I am concerned, that no one on the other side of the river should be opposed to our making that request, and I would be disappointed if you do not fulfill it.

General BROGAN. Aye, sir.

Mr. BARTLETT. General Brogan, do you have any additional suggestions of how we might have made this go quicker and better?

General BROGAN. I believe, sir, my comments would probably be more philosophical along the lines of what Congressman Abercrombie indicated.

I am sometimes asked as the acquisition individual in the Marine Corps, if we could build an LST in 8 days in World War II, why does it take us 8 weeks to get an assembly line started for Mine Resistant Ambush Protected Vehicles? My sense is that there has not been the total commitment by the industrial base to mobilize to fulfill the requirements that we find ourselves facing. So I am not sure that you all can solve that. I think it is in our national psyche to enjoy what we enjoy here and continue to provide the wherewithal for our troops in harm's way in addition to it rather than in lieu of it.

Mr. BARTLETT. I appreciate those comments. I am old enough to have lived through World War II. It was the last war where everybody was involved. We have had wars since then, and families have loved ones who have been involved, but beyond that, not everyone was involved. In World War II, everybody that could had a victory garden. We all saved our household fats and took them to the central repository. You could not buy tires for your car. No new cars were made for 3 full years because the industrial base was busy making things for the war effort. And I think we need to have a greater sense of urgency than we have, and I appreciate the concerns you have with the industrial base and how long it takes to get something done.

Mr. Chairman, I think that all of us would like to see the sergeant don that vest. I do not know how you do that in a formal hearing, but if he could don the vest and, just for a couple of moments, tell us of the significant protective features of the vest.

Mr. TAYLOR. Sergeant, we would appreciate your doing that, please.

Mr. ABERCROMBIE. You will not be appearing on the Bravo channel, Sergeant, but I expect it will be shown elsewhere. Hang on one

second. Can the camera that you are using here get it? Good. Maybe he could explain the functions of the various parts of it.

General ALLES. Sir, I think it would be helpful also if he tells us a little bit about the weight of that vest and how much standard equipment he had to carry in theater. That is very important. That has been a big concern.

Mr. TAYLOR. General Alles, if you would, please, ask the sergeant to walk us through the nomenclature, and one of the questions, one of the follow-up questions, is just to give us some idea of the weight of the individual parts and the cumulative weight.

General ALLES. So, Sergeant Perez, if you would tell us a little bit about the gear, and then tell us about the weight, and then tell us about what you had to carry in Iraq.

Sergeant PEREZ. Okay. I am more used to the different vest, the Outer Tactical Vest. It is basically front and back protection only. They added the side SAPI in for—like just recently, probably in the last year or so, which happened after I got out of theater. I have worn it with the side SAPI, and it probably had my arms out about right here, okay? With this one, it goes—you put it on over your head rather than putting it on—like—kind of like a vest, and the improvement is this tab, this black tab right here, all I have to do is pull that and then unclip one of these, and I am out of the vest, okay?

If you will notice here, this cumberbund that I am wearing that goes all the way around to the back distributes the weight onto my torso rather than on my shoulders. Right now I feel almost zero weight on my shoulders, so I could probably walk around with this on for 3 or 4 hours and it not be a problem for me to maneuver.

Other things—I mean, just—and also the SAPI plates. Like I said before, these are now sewn on the inside so they are tighter to your body. I can now assume a tighter platform, and I can shoot. And also where the other one did not have the webbing all the way around to the side where I can attach my other gear, this one does have that available to it; and as you can see in this one, it has this little flap right here. It offers a little bit more back protection. A lot of people were getting shrapnel due to narrow hallways, grenades coming down those narrow hallways, and then turning away from them, catching shrapnel in the back. This offers a little bit more protection with the Kevlar on the inside.

Mr. ADAMS. Sir, if I may also add, Sergeant Perez is brand new to the MTV. One of the other features, if you will turn around, please, is this quick release up on each of the shoulders. One of the enhancements we put on this vest came out of Iraq, from the corpsmen, which is that with the old OTV, since it is a front-opening vest, you have to open everything up in order to perform any kind of casualty assistance on the torso area. What this vest is designed to do is, if you unclip, you can unclip either side. That allows the corpsmen to get up underneath the vest, work on the chest area, provide life-saving measures while keeping the rest of the body fully covered. That is one of the other key advancements that came in from the operating forces, from the corpsmen, particularly what they needed in order to do their job of saving the marines.

A couple of the other features is we have beefed up the shoulder area here. Again, we have taken the weight off of the shoulders to

integrate and for the marine to wear in their assault pack. Part of the problem was it drove into the shoulder blade areas, so we increased the amount of protection in the thickness of the pads up in here.

We also redesigned the throat protector because the old throat protector kept it very close to the throat area, and it tended to trap heat, and the marines did not like to use it very often, so they would just leave it hanging down. This new design brings it further away from the neck. It is ergonomically designed. It will also increase the level of protection along with the use of a gap sitting in here along the vest. This collar was designed so it would tuck closer to the vest design area in order to provide more protection to what previously was exposed area. And also, we redesigned the yoke and collar assembly here where it sat a little bit further away from the head because, again, it was trapping heat, and also, when they wore the light-weight helmet and they were sitting down, the back of their helmet would hit against the back of the vest.

So the marines were going through the design process. We redesigned the collar to open it up a little bit further and make it more comfortable for the marines when they are both in a sitting position and also if they are bending down or getting into a prone position for shooting.

And the last enhancement I will point out is we put in a—we added a rifle bolster because one of the other complaints the marines had was trying to get a good stock weld to their weapon. So we have a rifle bolster that can be moved to either side—it depends if the shooter is right-handed or left-handed—and that allows them to get a good sight picture. As he brings his weapon up, that bolster helps hold the weapon in close to the shoulder where it is supposed to be in order for them to get a good sight picture.

General ALLES. Can you talk about the weights?

Mr. ADAMS. Yes, sir.

The weight of the base vest—equivalent to the OTV, it is approximately 13 pounds with the soft-armored panels in it. The weight of the E-SAPI plates in both the front and the back vary by size. For a large size E-SAPI plate, it is approximately six pounds.

Mr. ABERCROMBIE. “E-SAPI plate” means the Small Arms Protective Insert?

Mr. ADAMS. Excuse me, sir. Yes, the Enhanced Small Arms Protective Insert plate that sits in the front and the back. They reach a little over six pounds each for this vest, for this sized marine, and then on the side plate, the side Enhanced Small Arms Protective Insert plate, it sits on the side, a 6-by-8 plate. Its weight is approximately 2.3 pounds each. On top of that is all of the rest of the gear. Depending on what his mission is, he adds more weight to the vest with his grenades and whatnot.

Mr. ABERCROMBIE. Ms. Bordallo.

Ms. BORDALLO. Yes, I have a couple of questions.

Did they design armor with sleeves? I had heard at one time there were sleeves, and also, if you are a medic or a radio person out in the combat area, what additional weight is that in addition to?

Sergeant PEREZ. Most of our Navy corpsmen carry a medic bag, so they will have a combat load similar to what we are wearing. The only thing is that they usually carry a shotgun, so they are usually like less—

Ms. BORDALLO. So what is the total weight then with all of that?

Sergeant PEREZ. I would say probably in the realm of like around 50 pounds.

Ms. BORDALLO. Fifty pounds.

General ALLES. Can you talk about the weights you carried when you were there? How much do you weigh, and how much did you have to carry?

Sergeant PEREZ. I weigh approximately 200 pounds. I wore—what you see here was probably another four magazines so a total of eight magazines with every single one loaded to a 27-round maximum. I carried an M14-- or a PRC-148 radio which attached to me, which was a smaller version of the manpack radio, and then I also carried a sledgehammer and a pry bar for gaining entry into houses.

Ms. BORDALLO. Sergeant, what is the total of all of that?

Sergeant PEREZ. With weapon and everything, I would probably say in the neighborhood of 70 to 80 pounds.

Mr. ADAMS. Ma'am, we have a chart that we normally carry that talks about an average personal combat load. It is approximately 90 pounds. Now, that includes—that is everything. That is his uniform, socks, the whole kit that he is wearing. Yes, ma'am.

Ma'am, also, this was the—you asked about the arm protection and all of that. This is the arm protection part of what is called QuadGuard, but this is not used by the dismounted marines. This is used by marines operating at turret to provide the forearms/upper arms protection, shoulders, and there is also a trouser that they wear, again, just sitting in a turret. In case of fragmentation, their legs are protected, but at about 10 pounds, this is way too heavy for a dismounted marine to be wearing.

Mr. TAYLOR. Mr. Ellsworth.

I'm sorry. Are you finished, Ms. Bordallo?

Ms. BORDALLO. Thank you.

Mr. TAYLOR. Mr. Ellsworth.

Mr. ELLSWORTH. What is more liable to compromise the vest, shrapnel or a direct round? I maybe can guess that. And how is it rated for what arm fire would penetrate this vest, and is shrapnel worse or better than a bullet? And I do not know, maybe I am—

General BROGAN. There is not a clear answer to that.

The vests without—the Enhanced Small Arms Protective Inserts, the E-SAPI plates, are designed to stop fragments. That was generally the primary purpose of combat vests up until this point. I mean, from World War II forward, we wanted to stop shrapnel.

With these vests, with the insertion of the plates, we have now gone to stopping bullets as well. Enhanced Small Arms Protective Insert plates can stop up to a 7.62 round, but the plate cannot cover anything, or we would compromise the sergeant's mobility, as he indicated. So, in the areas, the large vital organs that are covered by those plates, that is the caliber that we are able to stop.

Ms. BORDALLO. Mr. Chairman.

Mr. TAYLOR. Yes, ma'am.

Ms. BORDALLO. I have one more question.

Mr. TAYLOR. Ms. Bordallo.

Ms. BORDALLO. I am just curious. You know, in other wars, we did not have this sophisticated armor and gear.

Do you have any idea how many lives we have—now, I have visited the hospitals in Germany and Walter Reed and Bethesda, and I have noticed that most of the injuries are to the limbs, not to the torso, and I know that must be because of the armor. So do you have any idea what are the percentages of those during previous wars, you know, as being—as this war now with the enhanced armor?

General BROGAN. Ma'am, your instinct is correct.

We have marines, soldiers and sailors surviving incidents that in the past would have killed them, and unfortunately, the result of that is we have many more very serious extremity injuries. I do not have the exact figures. We will have to take that question for the record and then get that information back to you.

[The information referred to can be found in the Appendix beginning on page 81.]

Ms. BORDALLO. I know it has to be much better, but I just was curious as to—

General BROGAN. Ma'am, our personal protective equipment is saving a lot of lives, and marines who otherwise would have died are surviving.

General ALLES. I should mention also that this is our state-of-the-art ensemble. The enemy recognizes where it is vulnerable, and they shoot. That is why we are concerned about snipers. They shoot intentionally where they think they know the gaps are from observation and where they think they can inflict the most grievous wounds on our marines.

Ms. BORDALLO. Well, in spite of it all, it is quite fashionable.

Mr. TAYLOR. General, you mentioned snipers and the unfortunate situation where the enemy is getting better at that. I am well aware of the upgrades to the armor.

A retired Army colonel who has done time in Iraq asked me to ask you if you felt like the—that our helmets are adequate, or should we as a Nation be looking at something other than the existing helmet?

General ALLES. I will let General Brogan address the current helmet we have now.

We do have research efforts underway at the Office of Naval Research both on body armor, on helmet improvements, on modular designs to try to address some of the deficiencies. Those are long-term efforts. We have put about \$3 million a year in those efforts. It will take us several years before we have an output there.

I will let General Brogan address any—if he has anything on the current designs.

General BROGAN. I believe those long-term research development efforts, sir—if they can reduce the weight of the helmet, I think that would be significant. If you would ask the sergeant what it is like to wear that helmet for the number of hours that he does on patrol, I think he would be thrilled to have the same level of protection in a much lighter configuration.

The current helmets provide a significant level of protection against shrapnel and against projectiles. Now that we have switched to the pad suspension system, we are also providing increased levels of protection against blunt force trauma. I believe that the helmets are certainly the best that we can provide today.

Mr. TAYLOR. Do you know if anything being used by our allies or even the former Warsaw Pact is superior that we should be looking at?

General BROGAN. Sir, none of our former enemies are close, and our allies generally use the same sort of technologies that we are. My program manager for an expeditionary rifle squad interacts routinely with our allies to look at their infantry ensemble and ensure that there is nothing out there that is better than what we are currently fielding.

Mr. ABERCROMBIE. To follow up—thank you, Mr. Chairman. I want to follow up on that because that was going to be the second round of questions that I wanted to ask. Again, setting aside any classified activity, I am very concerned about what it means in this increased activity that you are going to be facing in the next 6 weeks to 6 months with respect to the Ministry of Defense and the Ministry of the Interior.

General Pace indicated at the full committee hearing last week that the allies you will have in conducting your activities include National Police, Baghdad Police, National Army units, and now I am told that the politicians—well, I am not—okay. I have got to be careful about this—that they are even considering taking Kurdish units and bringing them into Baghdad. Presumably they are aware that the Kurds are not Arabs and that you are now mixing ethnicity in with religious divisions, all of which Sergeant Perez and others are apparently going to be able to figure out on the spot.

But if that is, in fact, going to take place—you have got Kurds, at least two different sections of the Ministry of the Interior Police, the Ministry of Defense Army working with you—will they be using this equipment, or will we be operating—and if they are using the equipment, how is it going to be utilized in terms of intercommunication—intrasquad, intraforce communication—and if not, how are you going to conduct the issuing and carrying out of orders?

General BROGAN. Sir, I am not able to tell you how the other forces are going to be equipped.

Mr. ABERCROMBIE. Well, let's let that aside for the moment. What about the equipment side here then?

General ALLES. Sir, I think that would be a question better taken for the record. I cannot answer the equipment requirements for the Iraqi police forces and the Iraqi Army.

Mr. ABERCROMBIE. So there is not an issue. When we are talking about the equipment here, we are talking strictly the Marines and the Army. We are not talking about equipping the Iraqi forces of various origins?

General BROGAN. No, sir. I only equip U.S. Forces.

Mr. ABERCROMBIE. Well, then how are you going to work together? I am not quite sure how this is supposed to work then out of these police stations—I am not trying to trick you—because this is happening now.

General BROGAN. I understand, sir. I am not qualified to speak.

Mr. ABERCROMBIE. I am being told as a Member of Congress that I am supposed to stand around and watch while this takes place because executive authority has decided to move you guys in there and do it, and I am trying to figure out, okay, you know, if Members of Congress cannot stop people from doing things—again, it is easy to talk. It is another thing to find out what the practical reality is, the kind of thing that Mr. Bartlett was talking about. What we are about on this committee, I can assure you, and what the committee as a whole is trying to figure out is how to actually support you. Now, that is why I am asking the question.

How does what you are planning to do right now work into what is expected of you in the next six weeks to six months in terms of the logistics, or is that yet to be determined?

General BROGAN. Sir, I would expect that that will be determined by the joint force commander in theater, and I am unable to speak to that for you.

Mr. ABERCROMBIE. Okay. Can we begin to take a look at that if you can carry that back across the river and say—you know, we are going to have to have this answered real quick.

General BROGAN. Sir.

General ALLES. Yes, sir, we will take that for the record, but we are not—I am not qualified to answer that.

[The information referred to can be found in the Appendix beginning on page 80.]

Mr. ABERCROMBIE. Do you know whether the supplemental budget has anything in it for equipping Iraqi allies?

General BROGAN. I do not know.

General ALLES. Sir, again, I cannot answer that question.

Mr. ABERCROMBIE. Does the 2007 budget have anything in there with respect to up-armorizing or providing armor or providing vehicles or equipment of any kind for the Iraqis?

General ALLES. Sir, again, that is one we would have to take for the record. It is not—I mean, we are aware of the Marine Corps' programs and Marine Corps' budgeting actions, not for the Iraqi Army, sir.

Mr. ABERCROMBIE. For the record then, the question that I am asking is what is the relationship of them in terms of budget and the kinds of things we are talking about here, what is the relationship to equipping and working with Iraqi allies or Iraqi cooperating forces, and do we need to cover that while we are covering what you are doing?

[The information referred to can be found in the Appendix beginning on page 80.]

General BROGAN. I understand the question, sir.

Mr. ABERCROMBIE. Okay.

General BROGAN. I do not have an answer, sir.

Mr. ABERCROMBIE. Thank you very much.

Mr. TAYLOR. Any further questions?

Again, Sergeant Perez, thank you for your service. We want to thank all of the marines present and enlisting for their service and all of the men and women who have chosen to serve our country.

Generals, I very much appreciate your being here.

General Brogan in particular, I want to appreciate your setting what I think is a very realistic but also ambitious goal. What I would ask of you are some milestones by month that you expect to be met for the record so that we can help you in tracking this, and should anything occur in the private sector that is keeping those milestones from being met, I would hope that you would come sooner rather than later to this committee to see what we can do to help you to get these vehicles fielded and the other things that the Marines need.

[The information referred to can be found in the Appendix beginning on page 77.]

General BROGAN. Sir, thank you for that offer.

Mr. ABERCROMBIE. One last thing just on a happier note. General Brogan, have you had an opportunity to visit Kaneohe since your original sojourns out there in the early 1980's?

General BROGAN. I have not, sir. I have not been back to Hawaii since I left. I would be glad to come.

Mr. ABERCROMBIE. Well, then, perhaps we can arrange to have you come with us then when we go out there because I would like you to see Kaneohe Bay now—

General BROGAN. I understand.

Mr. ABERCROMBIE [continuing]. And the housing that is there—

General BROGAN. There are significant infrastructure improvements at Kaneohe Bay.

Mr. ABERCROMBIE. Including for the single marine, not just the families.

General ALLES. I have been out there, sir, and it looks wonderful. I would like another assignment there.

Mr. ABERCROMBIE. Yes. I remember General Krulak, before he became Commandant, was commander out at Kaneohe, and then after he became Commandant and we had worked on the quality-of-life issues on housing out there, he said he was not sure that Kaneohe should remain a Marine Corps base.

Are you aware, Sergeant, of why the Commandant thought that? Sergeant PEREZ. I am not, sir.

Mr. ABERCROMBIE. That is just a trick question. Good for you.

The reason, he said, is it looked too much like a college campus. He was not sure the Marines did not need something a little more austere, but I do not notice anybody turning down any of the housing.

Anyway, I would like you to come out and see it now some—what? It will be 20, 25 years later, right?

General BROGAN. It certainly would.

Mr. ABERCROMBIE. Thank you, Mr. Chairman.

Mr. TAYLOR. Mr. Bartlett, anything?

Okay. General Alles, the smart folks who work with me have asked me to ask you. Your opening statement noted the urgent need for rapid response, emerging requirements, and then, third, existing reprogramming actions limited your flexibility.

For the record, could you expand on this if you choose to do so now? And the other follow-up question was has your flexibility been limited?

General ALLES. Sir, we can expand on that in the record. It goes back to what Mr. Bartlett asked me, which is we understand that the Joint IED Defeat Organization's appropriation allows a maximum flexibility because they can determine the purpose of the funding at the point of execution. Each year the Marine Corps reprograms monies or funding to meet our emergent requirements because we have an enemy that is constantly changing, and that there are always inherent delays when you do those reprogramming actions.

Our mission, including our Title 10 mission, would be greatly enhanced by the ability to—or the kind of appropriation that the Joint IED Defeat Organization receives. A similar type of appropriation would be very beneficial to us and would help us meet these unforeseen requirements and necessitate new funding streams.

Now, the front end of this, the science and technology part of this, I can take care of with the Marine Corps Warfighting Lab because we can, as necessary, redistribute monies inside of my program element to meet whatever the emergent requirement is. And we do that, but when it comes to the larger dollars required to do procurement on General Brogan's side, that is not something that can be met inside science and technology funding; that is not what it is made for, and plus, there is not enough of that money to do that kind of work anyway, and that is what causes us to go through these reprogramming actions.

So receiving appropriation authority similar to what the Joint IED Organization has would be very helpful to us as a service.

Mr. TAYLOR. Would you like to follow up on that, General?

General BROGAN. Sir, as I mentioned, something similar to the Combat Mission Needs Fund that was established for Special Operations Command available to the services would be helpful, and in looking at the below threshold with programming limits for both the RDT—research, development, testing—evaluations and procurement dollars, neither of those have changed in a fairly significant time, so some consideration could be given to changing those thresholds, which would provide a little bit more of the flexibility that General Alles mentioned.

Mr. TAYLOR. If you would provide that request in writing, I promise you we will get it in the hands of Mr. Murtha and the appropriators.

General BROGAN. Aye, sir.

General ALLES. Sir.

Mr. TAYLOR. I want to thank you very much for your service. Thank you very much for being here today. This committee is adjourned.

[Whereupon, at 4:54 p.m., the subcommittee was adjourned.]

A P P E N D I X

JANUARY 16, 2007

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

JANUARY 16, 2007

FOR CONGRESSIONAL USE ONLY

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UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE
SEAPOWER AND EXPEDITIONARY
FORCES SUBCOMMITTEE

STATEMENT
OF
BGEN RANDOLPH ALLES
COMMANDING GENERAL, MARINE CORPS WARFIGHTING LAB /
VICE CHIEF OF NAVAL RESEARCH
UNITED STATES MARINE CORPS
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND EXPEDITIONARY FORCES
CONCERNING
MARINE CORPS FORCE PROTECTION PROGRAMS
ON
JANUARY 16, 2007

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Introduction

Mr. Chairman, Representative Bartlett, and distinguished members of the Seapower and Expeditionary Forces Subcommittee, thank you for the opportunity to appear before you today to discuss Marine Corps force protection efforts in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). As the world's foremost expeditionary warfighting organization, the Marine Corps is fighting today's wars while remaining focused on the challenges ahead. While our commitment to *The Long War* is characterized by central campaigns in Iraq and Afghanistan, we are mindful the struggle against enemies of this nation and her allies is multifaceted and generational in nature. It will persist and metastasize in many different ways, constantly evolving and adapting itself in an attempt to offset our military capabilities and technological superiority. A key aspect to our adversaries' strategy is to develop and employ methods that directly target our service personnel with the intent to produce casualties and undermine our will.

Our enemies have been resourceful in exploiting our vulnerabilities in an asymmetrical security environment; however, through innovation, institutional adaptation, and congressional support your Marine Corps is attaining the needed resources to protect our forces and prevail in a challenging fight for our nation's survival. On behalf of all Marines, I thank the Committee for your continued interest in supporting force protection initiatives that seek to reduce our vulnerability and enhance our survival on the modern battlefield.

Today I will discuss progress for enhancing and accelerating force protection initiatives by highlighting numerous Services and agencies that share a common goal of defeating the most prevalent battlefield killer, the Improvised Explosive Device. Examples of technologies, techniques and training will provide tangible proof of the utility your support has provided to date and underscore the need for your continued support in the future.

Marine Corps Warfighting Laboratory / Office of Naval Research

The Marine Corps Warfighting Laboratory (MCWL) is a focal point for exploration of future warfighting concepts and experimentation. It supports the Marine Corps combat development process and provides Marine Corps contributions to Joint Concept Development and Experimentation, ultimately leading to increased capabilities for our expeditionary warfighting forces now and in the future. Established in October 1995, as a critical engine for change, within the Marine Corps Expeditionary Force Development process, the Lab conducts

concept-based experimentation to develop and evaluate tactics, techniques, and procedures (TTPs), as well as technologies, in order to provide the warfighter with enhanced capabilities. These technologies and TTPs are field tested in concept-based experiments conducted with the operating forces. Marine Corps experimentation is a key part of an adapting and changing Corps. The Lab recognizes there are three worlds of innovation and transformation—solving immediate problems, realizing the next service, and charting a way for the service after next. Clearly, the war we are currently fighting causes us to spend a great deal of our efforts on solving immediate problems but we continue to work toward the future as well.

The Lab also serves as the Marine Corps' access point to the larger science and technology (S&T) communities, such as the Office of Naval Research (ONR) and Defense Advanced Research Projects Agency (DARPA). In addition to my duties and responsibilities as the Commanding General (CG) of the MCWL, I am the Vice Chief of Naval Research (VCNR) and, I serve as the Executive Agent for Marine Corps S&T to develop the vision, policies, and strategies needed to exploit scientific research and technological development. Capitalizing on these responsibilities, the Deputy Commandant for Combat Development and Integration designated the Lab as executive agent for Marine Corps Improvised Explosive Device (IED) defeat efforts.

Our technology solutions to support the warfighter may be prototype systems solely developed by the Lab or in a coordinated effort with other government S&T agencies. Additionally, MCWL often assists Program Managers from Marine Corps Systems Command in development of a capability insertion for an existing program of record. Since the Lab coordinates with other agencies, some candidate solutions may be surrogate systems developed by DARPA, ONR, or they may be commercial off-the-shelf systems available from industry.

The Marine Corps continues to work with other Services and Joint organizations to reduce the effect of IEDs. As the CG, MCWL, I serve as the Marine Corps' representative to the Joint Improvised Explosive Device Defeat Organization (JIEDDO). Our organization is fully integrated into JIEDDO with a full-time liaison officer engaged in the daily staff functions to ensure situational awareness on all IED related issues. Finally, the Marine Corps, is represented in the Joint Integrated Process Team, the Joint Systems Integration Board, and the tenet Integrated Process Teams (Predict/Prevent, Detect, Neutralize, Mitigate, and Training). The Marine Corps and the JIEDDO continuously coordinate counter IED cross training activities.

The new Joint Counter IED Center of Excellence, headquartered at the National Training Center in Ft. Irwin, CA, includes a detachment at the Marine Corps Ground Training Center in Twentynine Palms, California, further linking the Services together in counter IED training efforts.

Established in December 2003, MCWL's Improvised Explosive Device Working Group (IEDWG) brings an increased focus to addressing this particular high-profile threat to our forces operating in Iraq and Afghanistan. The IEDWG is comprised of all elements of the Marine Corps Combat Development Command as well as a diverse group of representatives from Headquarters Marine Corps and the Joint IED defeat community. They are chartered to work closely with other services and organizations to identify and develop technology, programs, and procedures for addressing the IED threat. The IEDWG also serves as the Marine Corps conduit to the JIEDDO.

Rapid Equipping Initiatives

Utilizing a proactive approach, while closely coordinating with the operating forces, enables us to address our Marines' and Sailors' needs in Iraq, Afghanistan and the Horn of Africa. No armoring scheme can protect completely against anti-tank or tandem mines, very large IEDs, and suicide vehicle bombs. However, we have fielded vehicle armoring, personal protection, and counter IED equipment using a combination of internal reprogramming actions and supplemental funds provided by Congress.

We have streamlined the Marine Corps Urgent Universal Needs Statement (UUNS) process, providing a shortened method through which our operating forces identify and forward new requirements for weapons and equipment up the chain of command for rapid review and approval – most in under 90 days. Once approved by the Marine Corps Requirements Oversight Council, the Marine Corps and the Department of the Navy realign necessary funds within permitted reprogramming thresholds. The sources for these reprogramming actions have been our investment accounts. In many cases, funding was made available by our decision to accept risk and defer the full execution of approved programs in order to address immediate warfighting needs. Validated requests exceeding established reprogramming thresholds were, and will continue to be, forwarded to the Congress for notification and approval. Some of our most recent examples of UUNS are a hazardous material identification kit capability; a special

purpose rifle designed to enhance the capabilities of our infantry squads, and increased MTRV blast protection. The flexibility to reprogram funds towards unanticipated emerging requirements allows the Marine Corps to remain responsive to our forward deployed forces. However, the opportunity cost for doing so often results in delaying funding for programs of record.

Again, we also maintain a close relationship with the JIEDDO, and we take advantage of the Joint Staff's Joint Universal Operational Needs Statement (JUONS) process whenever possible. All emerging operational force counter IED needs are now processed as JUONS through the Joint Staff and JIEDDO, most recently, Mine Resistant Ambush Protected vehicles, persistent intelligence, surveillance and reconnaissance capabilities such as ANGEL FIRE and Ground Based Operational Surveillance System, and mine rollers. Through the JUONS process, over the past two years, JIEDDO has spent over \$4.83 billion to research, procure and operate counter IED technologies for the forward deployed forces. The Marine Corps has directly benefited through the funding of technologies that continue to save lives and support the joint force. We can provide a detailed listing of current JUONS and their status via separate correspondence as a classified document.

Force Protection Programs

From the beginning of *The Long War*, up through today, the threat to our forces has continued to develop and change. We are fighting a thinking enemy who, while trying to stay alive, is trying very hard to kill us. As we modify our force protection measures, they mature in sophistication in response. We continue to aggressively match our training and equipment to the changing threat to ensure our Marines and Sailors are equipped with the best force protection equipment possible. Congress has responded rapidly and generously to our requests for equipment and increased protection for our Marines and Sailors, and we take seriously our responsibility for management of these resources as we modernize our force.

Counter-Sniper technology. MCWL is leading a four-pronged approach to countering the threat from snipers. Focused on increasing the ability to sense and warn, deny, protect, and respond, the Laboratory has leveraged the cooperative efforts of DARPA, the Army, the Navy, the National Ground Intelligence Center, and numerous Marine Corps agencies. Future sense and warn capabilities include optical, acoustic, and infrared detection and location. We are

examining the potential to defeat the enemy sniper through different obscurant technologies, while our protection effort is focused on individual armor and new tactics, techniques, and procedures. Response capability includes counter-sniper vehicles and the DARPA sniper rifle program with improved night target acquisition and concealment capabilities.

Lab experimentation, which is being conducted in-theater as well as within the United States, is combating the sniper threat through advanced equipment and improved TTP. Ongoing joint and interagency cooperation, coupled with industry collaboration, will shape continued experimentation with current and emerging technologies. By way of example, in the summer of 2005, the Lab performed a comparative assessment of several counter sniper technologies. The assessment included six acoustic gunfire detection systems, of which the best overall performer was the Boomerang (generation two), sponsored by DARPA. After some further development, in the fall of 2005 the Lab delivered 25 Boomerangs into Iraq to conduct experimentation with Marine units. Based on positive feedback and warfighter requests for more systems, the Lab collaborated with the Army Rapid Equipping Force to procure 100 more systems for expanded experimentation. These systems are scheduled to be delivered to MCWL by the end of January for follow-on distribution to the operating forces.

We are also experimenting with technology to detect electro-optical and infrared devices commonly employed by the enemy, from rifle scopes used by enemy snipers, to video cameras used by enemy spotters to document a sniper or IED attack. Detection of these threat optics will provide indications and warning of impending sniper or IED attacks, a predictive capability to avoid or engage the threat prior to sustaining friendly casualties. The Lab currently has fifteen such detection devices in-theater undergoing experimentation and user evaluation.

The Lab is also conducting experimentation in sniper weapon capabilities to respond by engaging the threat. One initiative, again in cooperation with DARPA, involves the XM-3 enhanced bolt-action sniper rifle. This rifle has a noise suppressor, an improved night optic, and a collapsible stock. The rifle is lighter in weight and shorter in length than the current M40A3 sniper rifle. One rifle is currently in-theater undergoing user evaluation, and ten rifles have been delivered to CONUS units for evaluation and training. Twenty-six rifles will be produced and distributed among the Marine Expeditionary Forces (MEF) for user evaluation. Initial feedback is very positive. The ability to engage the enemy with a suppressed rifle can allow our snipers the ability to take more than one shot from a final firing position. Additionally, the decreased

length of the rifle allows our snipers an ability to conceal the weapon when patrolling. This prohibits the enemy from identifying our snipers, making them less vulnerable to targeting.

The Counter-Sniper Vehicle (CSV) initiative integrates the Boomerang acoustic detection and location system with an optics-equipped remotely operated weapons system mounted on a High-Mobility Multi-purpose Wheeled Vehicle (HMMWV). This integration will automatically aim the weapon and optics to the detected sniper threat, enabling the operator to visually acquire, identify, and engage the threat from a protected position inside the vehicle. MCWL is experimenting with one system in cooperation with the I MEF. The Army Rapid Equipping Force is also assessing CSV for Multi-National Corps-Iraq deployment.

MCWL is also pursuing experimentation aimed at denying a detected potential enemy sniper the opportunity to engage friendly forces. One method of denial is the use of glare aversion devices currently being developed and employed as Non-Lethal Weapons. These devices, commonly referred to as Laser Dazzlers, apply a non-injurious, but discomforting, bright light. Assessment of the subject's response to this effect can help determine hostile intent. Marine Corps Systems Command is currently fielding green beam lasers in response to an UUNS for an escalation of force capability to determine hostile intent short of using kinetic weapons. Fielding of 400 devices has begun, and will be complete by the end of this fiscal year. The glare aversion effect may also be effective in prohibiting a potential sniper from visually targeting friendly forces. The Lab is conducting comparative assessments of candidate devices, and experimenting with the incorporation of such devices into the Marine Corps' counter-sniper capabilities.

Persistent Intelligence, Surveillance, Reconnaissance. The Persistent Intelligence, Surveillance, Reconnaissance (ISR) strategy is a component of the Marine Corps ISR-enterprise that supports Marines across the spectrum of military operations. Its focus is the capability to integrate the network of air, ground, and space sensors with sufficient fidelity to detect, locate, identify, track, and target threats; thus reducing the effectiveness of improvised explosive devices (IEDs), through the identification of personnel, activities, and facilities associated with the manufacture and emplacement of IEDs. This network is enabled through unmanned aerial and ground systems, human intelligence exploitation teams, ground signals intelligence / electronic warfare, tactical fusion centers, and pre-deployment training programs. We are developing ISR capabilities in coordination with the JIEDDO's point, route, and area targeting

concepts. Some capabilities under development to support this concept include unmanned aerial systems, unmanned ground sensors, airborne wide field of view persistent surveillance (ANGEL FIRE), and the Ground Based Operational Surveillance System (GBOSS). ANGEL FIRE provides near real time, wide field of view, geo-registered imagery that is down-linked to battalion-level operators for enhanced situational awareness, IED mitigation, and support to urban warfare, security, disaster relief, and other operations. The initial deployment of this capability is scheduled for late spring/summer 2007. GBOSS is a force protection system that provides a twenty-four hour day/night persistent surveillance system-of-systems that integrates command and control; commercial off the shelf and government off the shelf sensors; a warning system, to detect, locate, identify, track, and target threats, specifically activities associated with the emplacement of IEDs.

Counter Improvised Explosive Device Efforts

One of our primary concerns is protecting Marines and Sailors, and equipment essential to mission accomplishment from the threat of IEDs. As mentioned earlier, we are closely tied with the JIEDDO's efforts and are focused on fielding capabilities across all tenets of the IED Defeat spectrum: predict, prevent, detect, neutralize, mitigate and training. Our enemy is adaptive and innovative. There is strong corroborating evidence that our enemy studies open media sources accessible via the internet as well as private, professional and technological fora to gain insights into our counter-IED TTPs. The Deputy Secretary of Defense, Commandant of the Marine Corps, and the Director of the JIEDDO agree that the safety of our in-theater forces merits a significant level of operational security. Accordingly, discussion of certain aspects of our counter IED initiatives will require a closed session to discuss.

The following examples address tenets of the CIED spectrum:

Detect technologies

IED Detector Dogs. Dogs have long been used to perform various jobs in support of military missions. Currently, the Marine Corps uses dogs primarily in law enforcement roles, but is increasingly relying on them to assist in finding IEDs. While we have had some successes "enforcement" dogs used to locate IEDs, we have also had challenges. To address these challenges, we are conducting a proof of concept to see if other dog breeds may be more suited for counter-IED missions, specifically, our proof-of-concept seeks to leverage the innate

submissive obedience and hunting instinct of the Labrador Retriever. In training, we have found these dogs to be quick learning, eager to please their human handlers, and capable of physical endurance that far exceeded expectation. If successful, we are poised to exploit this potentially effective asset in a very short time.

Hyper-Detection Imaging Location System (HDILS). The Marine Corps is always searching for new methods to find IEDs. The Hyper-Detection Imaging Location System (HDILS) is a developmental project that strives to detect IEDs from a vehicle at operationally safe distances and while moving at higher speeds. Details of this project are classified but if successful, it will provide a great capability to the warfighter. While we are optimistic of the outcome of this project, we are also realistic, and categorize it as a high-risk experiment.

Neutralize technologies

Ground Robotics. To increase standoff from IED blast effects, we have equipped our Engineer Battalions and Explosive Ordnance Disposal (EOD) units with a host of robots. Examples consist of the Marcbot for engineer reconnaissance, and the Talon, Packbot, Bombot, and RC-50 for EOD operations. Input from the field will permit fielding of the best of these systems to the operating forces and training establishment.

Counter Radio -controlled IED Electronic Warfare (CREW). Since 2003, IEDs have become the single most significant threat to our deployed forces. Our enemies constantly adapt the IED in size, fusing, and techniques of employment. They are the primary source of U.S. casualties, both wounded and killed in action. We are currently fielding second-generation Counter Radio-controlled IED Electronic Warfare (CREW) devices to respond to new enemy IED tactics and are actively involved with the Navy's Single Service Manager's Joint CREW program office. Since we began fielding our second-generation CREW jammers, we have seen no radio controlled IED deaths.

Joint IED Neutralizer (JIN)/ Mine Rollers Concept. The recent fielding of Marine Corps mine rollers provides an opportunity to utilize other technologies that were not previously operationally feasible. This is because the mine roller is a suitable platform to integrate certain technologies that will further protect and enhance Marine survivability. Details of most of these technologies are classified. The Marine Corps is currently integrating JIN onto a mine roller and will be conducting a technical assessment in the first half of February.

Pre-detonation. To enhance our ability to counter IEDs, we, in concert with JIEDDO, are pursuing diverse technologies, both airborne and ground-based, aimed at pre-detonating various types of IEDs. These pre-detonation technologies utilize a wide range of techniques and employment methods to counter the various types of IEDs and their associated triggering devices. A majority of these pre-detonation technologies are currently in the experimental, developmental, or operational assessment phases. As an example of the potential for pre-detonation technology employment, the recent fielding of Marine Corps mine rollers provides an opportunity to utilize pre-detonation technologies that were previously operationally limited. The Marine Corps is currently integrating pre-detonation devices onto a mine roller and will be conducting a technical assessment in the first half of February. Further discussion of pre-detonation initiatives will require a closed session to discuss.

Mitigate technologies

The final vital phase of the force protection continuum addresses actions Marines and Sailors take to mitigate the effects of the enemy's weapons.

Improved Body Armor. The Marine Corps, in coordination with ONR is researching and investigating new materials and designs for integration into body armor systems that provide lightweight, modular protection for the individual consistent with identified requirements, current and future. We are pursuing an evolutionary development strategy for lighter, stronger material that will increase protection with an advantageous tradeoff in weight and mobility. Currently the Modular Tactical Vest (MTV) and Enhanced Small Arms Protective Inserts (E-SAPI) use the most advanced material available. Efforts by ONR, MCWL and NRL to survey industry and academic institutes are increasing the knowledge to better define the trade space of protection versus weight and mobility.

MCWL is also coordinating with industry and the US Army Soldier Center at Natick, Massachusetts, in the development of Human Surrogate Modeling and Simulation (HSMS) that will provide a tool for evaluation of current and future body armor system. Future S&T efforts will design body protection systems for reduction of blunt force trauma by using knowledge of existing and emerging threats, increasing material development, and modeling and simulation of both blast and ballistic effects.

Ground Vehicles. Probably the single most effective item in protecting Marines has been our various vehicle-armoring efforts, and while we have saved countless Marine lives by doing so, the enemy is extremely adaptive and responds to our increased protection by making larger and more lethal types of IEDs. The up-armored HMMWV is now carrying weight over its' designed capacity and yet still has areas vulnerable to certain enemy tactics. We are therefore always searching for better ways to protect Marines whether it is a more heavily armored vehicle on a platform different from the HMMWV, or different types of armor. We remain diligent in working with JIEDDO and supporting their various armor studies and tests, the results of which will be invaluable in pending and future protection efforts.

The Army and Marine Corps are leading the Services in developing tactical wheeled vehicle requirements for the joint force. The Army/Marine Corps Board has proven a valuable forum for coordination of not only requirements, but the production of new armoring kits such as Frag Kits two and five, the fielding of increased numbers of up-armored HMMWVs, and rapid response to Combatant Commander requests for Mine Resistant Ambush Protected (MRAP) vehicles. The approved USMC requirement is 1022 with a new request from the force commander in Iraq for more, up to triple the current requirement, which the Marine Corps is currently validating.

Additionally, the Army/Marine Corps Board has been the focal point for development of the joint requirements for a Joint Light Tactical Vehicle (JLTV) focused on providing protected, sustained, networked, and expeditionary mobility to the joint force in the light tactical vehicle weight class. ONR has made investments to support the JLTV effort that will assist in refining the vehicle requirements and reducing technical risk. ONR is investing in studies, analysis, and technology development in three primary focus areas; conceptual and trade studies, survivability and mobility. The specific technologies include; enhanced survivability, armor development, mine and blast analysis, advanced suspension systems, and fuel efficiency. These S&T efforts are fully integrated into the JLTV program.

This past fall, the Army's Training and Doctrine Command and Marine Corps Combat Development Command, in collaboration with Navy, Air Force, and Special Operations Command representatives, received Joint Staff approval of the Ground Combat Forces Light Tactical Mobility Initial Capability Document, documenting joint forces' capability needs for the light tactical wheeled vehicle fleet. During December 2006, Army and Marine Corps combat

developers staffed the JLTV Capability Development Document, defining requirements for the long term HMMWV replacement.

Training and Education. In addition to material and technological solutions the Marine Corps is working diligently to develop and implement training and educational programs that mitigate risk, enhance force protection, and contribute to our ability to accomplish the mission. Looking ahead to the challenges of the Long War, we have enhanced our counterinsurgency capabilities while remaining vigilant that our Marine Air Ground Task Forces (MAGTF) must remain ready to launch robust forcible entry operations and succeed across the spectrum of conflict with our naval, joint, and combined partners. With Marine forces so closely engaged in an irregular fight, we will have to take extraordinary steps to retain this ability to retain our skills across the spectrum of conflict. Your support of our training and education needs will allow us to remain faithful to our enduring mission: to be where the country needs us, when she needs us, and to prevail over whatever challenges we face.

This adaptive enemy requires us to have a responsive training and education continuum. Our rapid and effective lessons learned management system promptly captures the lessons being learned by our Marines and Sailors in complex combat actions around the globe. Our web-based lesson input support tool—selected by the Joint Staff last year to serve as the Department standard—guides this learning process. Capitalizing on the institutional agility that has been a hallmark of our success, last year we implemented changes in such areas as crew-served weapons use, tactical questioning, evidence gathering procedures, command and control equipment training and procedures, civil-military operations, and detainee handling.

An example of adaptation includes our Center for Advanced Operational Culture Learning, which we established during May 2005 and recently reached its full operational capability. Both officer and enlisted Marines now receive education in the operational aspects of culture at nearly every phase of their career development. This year, the Center is establishing Language Learning Resource Centers at our eight largest bases and stations. These centers provide language instruction using mobile language training shelters and contracted professional language trainers. These efforts support the Defense Language Transformation Roadmap increasing our interoperability with partner nations around the globe. We are also reviewing specific proposals and efforts to expand our Foreign Area Officer (FAO) program, and have

added new FAO billets over the last year, thus creating language and culture experts from all occupational specialties who can be integrated into Marine units operationally deployed worldwide. We thank the Committee for its support in this venture, as recent supplemental funding proved instrumental to this effort.

During this past year, we also reviewed our efforts to instill in Marines those core values necessary to guide them correctly through the complex ethical demands of this conflict. We have ensured that every Marine, at every phase of the training continuum, studies ethical leadership, the Law of War, Escalation of Force, and Rules of Engagement. The intrinsic value of these competencies to contribute to our force protection measures is invaluable. Our entry-level training first presents these concepts in the classroom, and then tests for proper application of these principles under stressful field exercises. We complement Core Values training through the Marine Corps Martial Arts Program, which imbues our Marines with the theme “Wherever we go, everyone is safer because a US Marine is there” and applies the sophisticated character building techniques found in the martial arts.

Over the past year, the Marine Corps has developed several new publications to address irregular warfare and its subset, counterinsurgency (COIN). The focus began with the Tentative Manual for Countering Irregular Threats: an Updated Approach to Counterinsurgency Operations. This publication, aimed at the battalion level and above, provides our conceptual approach—which acknowledges a requirement for a comprehensive strategy in order to deal effectively with the irregular threats we face which are complex, dynamic, and extremely difficult. The Marine Corps partnered with the US Army in the writing of a new battalion-level and above manual for COIN called Counterinsurgency Operations (FM 3-24/MCWP 3-33.5). This manual, written by a collection Soldiers and Marines with recent operational experience as well as experts in the field of COIN, fills a doctrinal void of over 20 years. Simultaneous to this effort, the Marine Corps wrote the Small Unit Leader’s Guide to COIN, a project aimed at the company level and below, and partnered with Special Operations Command to write a multi-service concept outlining an approach for waging and countering irregular warfare as part of an overarching campaign. These efforts led to publication of the Joint Operating Concept for Irregular Warfare, recently completed, which calls for a whole-of-government approach to dealing with irregular warfare. Hand in hand with our joint partners, including Special Operations Command, we have developed significant relationships with the Department of State,

U.S. Agency for International Development, the Department of Treasury, the Department of Homeland Defense and many others. Our work with other executive departments is aimed at developing and refining the interagency approach to problem solving. Next week (21-26 February) we will be examining campaign design and have participants from across the Department of Defense, many of the executive departments mentioned above as well as many of our international partners: Australia, Canada, Denmark, Germany, Israel, New Zealand, Singapore, Spain, Sweden, and the United Kingdom.

Training Marine Air Ground Task Forces. Our continuing adaptations and investments in core values are checked once more prior to deployment with a series of unit mission rehearsals. These exercises occur during the culminating block of our formal Pre-deployment Training Program, which we expanded during 2004 to serve all deploying MAGTFs. While reinforcement of the concepts of force protection runs through all blocks of the program, these training blocks present all deploying personnel with increasingly complex situations designed to replicate the confusing swirl of combat on a complex battlefield. Role players, many of whom are Iraqi-Americans, portray battlefield civilians and insurgents alike, presenting exercise-worn Marines with sudden “shoot-don’t shoot” decisions and forging within our Marines a sense of common cause with the civilians they will soon protect. These rehearsals occur during three distinct exercises: Mojave Viper, Desert Talon, and Mountain Warrior—each specifically tailored to the deploying unit’s destination combat environment.

During 2006, we continued to modify this program with expanded training in force escalation and with increased integration of logistics combat units, particularly at Twentynine Palms, California: home to the Mojave Viper field exercise and mission rehearsal. To better prepare Marines to counter the threat of improvised explosive devices, we added more training devices, built new ranges, and employed electronic warfare specialists at our rehearsal sites. This year we are focusing our enhancements on the training of advisor teams and of Marine Air Ground Task Force staffs by increasing the use of simulation. We are currently working to replicate our Twentynine Palms simulation and IED Defeat capabilities at our home stations. This will expose more Marines to cutting-edge force protection training devices and simulations. Our planned improvements promise to deliver Marine forces ready to meet the emerging challenges faced by the Combatant Commanders as a naval force in readiness in joint, combined, and interagency operations.

Conclusion

While our commitment to *The Long War* is characterized by central campaigns in Iraq and Afghanistan, we are mindful this struggle is multifaceted, generational, and global in nature. Our enemies are constantly evolving and adapting to offset our military capabilities and technological superiority. Through innovation, institutional adaptation, and congressional support your Marine Corps is attaining the needed resources to prevail in the new security environment. The challenges we now face are enormous, yet our past is replete with examples of how we have overcome daunting, seemingly insurmountable barriers that tested our resolve.

Our synergistic efforts enable us to exploit Service and Joint opportunities to pursue rapid development and fielding of equipment to our operating forces. By maintaining a close collaborative and tightly integrated relationship within the S&T communities, we are able to identify emerging OIF and OEF needs that enable us to develop and implement stronger force protection programs. In addition to material, technological, and TTP solutions the Marine Corps is working diligently to develop and implement, training and educational programs--critical enablers to mitigate risk, enhance force protection, and contribute to mission accomplishment.

On behalf of all Marines and Sailors, we thank the Committee for your continued support that has enhanced our warfighting capability, saved lives, and allowed us to protect this great Nation in an uncertain world. Your interest and commitment to force protection programs is an invaluable enabler to fighting the Long War on Terrorism.

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THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT

OF

BRIGADIER GENERAL MICHAEL M. BROGAN
COMMANDER
MARINE CORPS SYSTEMS COMMAND

BEFORE THE

SEAPOWERS AND EXPEDITIONARY FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

MARINE CORPS FORCE PROTECTION EFFORTS

16 JANUARY 2007

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE

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Chairman Taylor, Congressman Bartlett, and distinguished members of the Subcommittee, I am honored to appear before you today, and for this opportunity to discuss Marine Corps force protection systems. But first, on behalf of all Marines and their families, I want to thank you for your continued support for our Marines as they fight the Long War on Terror.

FORCE PROTECTION SYSTEM PROCUREMENT METHODOLOGY

The Marine Corps is committed to providing force protection equipment to save Marines' lives, reduce Marine casualties, and limit the severity of our casualties. Our goal is to ensure that one-hundred percent of our force protection requirements are quickly met with the best systems available; and, to my knowledge, there are no available commercial force protection products more capable of saving our warfighters' lives and reducing injuries in combat than the equipment and systems I am going to describe for you today.

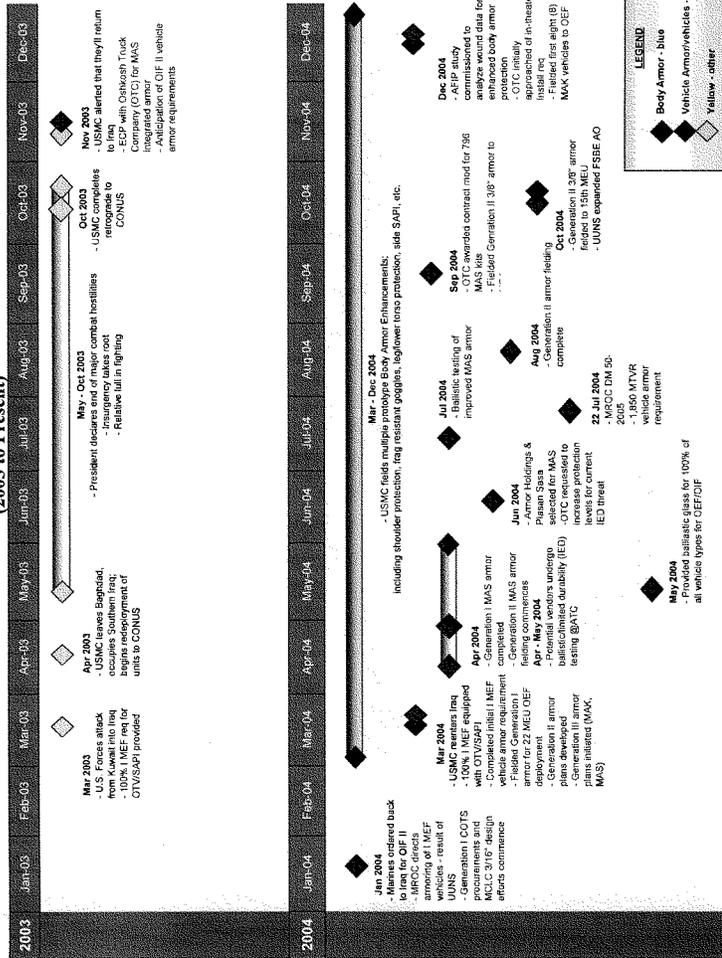
It is important that we understand the environment in which our fielded systems will operate. Therefore, based upon warfighter input, and drawing on our intelligence resources for the latest information on the most prevalent devices and weapons our enemy is employing, we identify the best systems available that can immediately meet the tactical and safety needs of our warfighters and get those systems into the hands of our Marines as quickly as possible.

We have positioned ourselves to initiate innovative and rapid modifications to our equipment to meet evolving threats and future challenges by taking a rapid generational development and fielding approach. After a system is fielded, we continue to look for ways to improve those systems. We collaborate with industry both here and abroad for design, development, and production assistance. We also collaborate with our sister Services to identify areas for joint activities and testing, and we turn to the medical community for their expertise in making our systems the safest they can be for our warfighters.

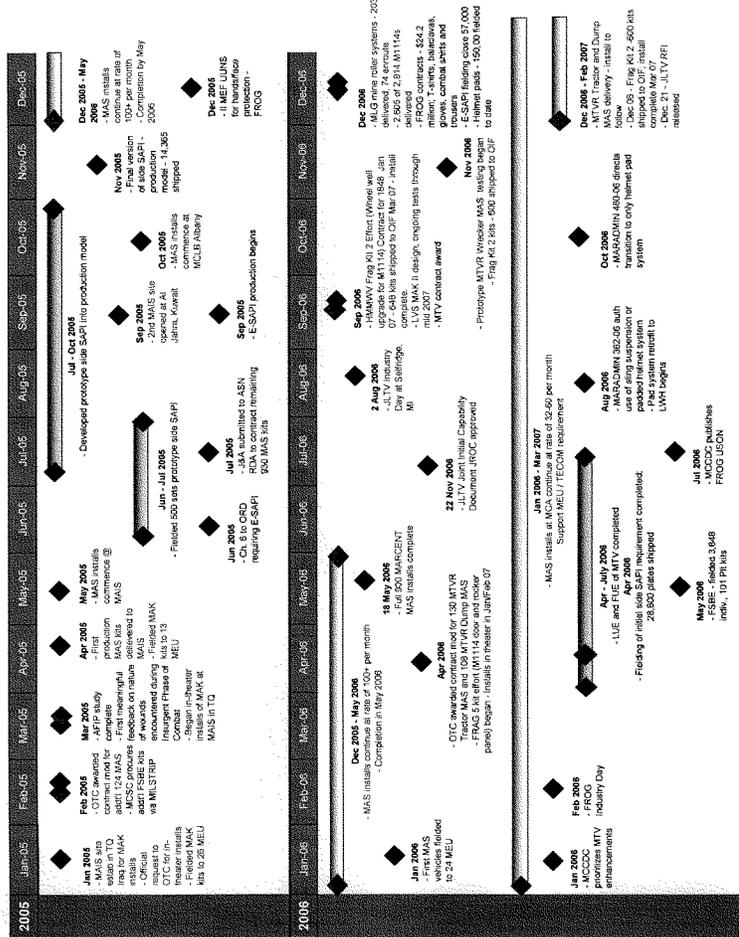
The mix of solutions that we provide our warfighters allows them to counter the enemy's ever changing capabilities. The following charts show how we have incorporated lessons we have learned from our warfighters since the start of Operation IRAQI FREEDOM.

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Force Protection Systems Timeline
(2003 to Present)



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Draft 5**MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLES**

Mine Resistant Ambush Protected vehicles, initially referred to as Hardened Engineer Vehicles, are designed to protect vehicle crew and passengers from mine blasts and fragmentary and direct fire weapons. They are designed with a “V” shaped hull and are employed to protect against the three primary kill mechanisms of mines and improvised explosive devices – fragmentation, blast overpressure, and acceleration. These vehicles provide the best available protection against improvised explosive devices to our Marines. The Marine Corps is fielding a series of different vehicles to counter these threats.

Cougar

In response to an Urgent Universal Needs Statement and in support of critical Explosive Ordnance Disposal (EOD) and combat engineer operations, the Marine Corps fielded twenty-six hardened engineer vehicles, also known as Cougars, in support of Operation IRAQI FREEDOM II. These vehicles provide protection capabilities for combat engineers and explosive ordnance disposal teams.

Joint Explosive Ordnance Disposal Rapid Response Vehicle (JERRYV)

On 21 April 2005, via the Joint Rapid Acquisition Cell, the Deputy Secretary of Defense designated the Marine Corps Systems Command as the joint agent for the procurement of 122 Joint Explosive Ordnance Disposal Rapid Response Vehicles for all joint explosive ordnance disposal forces in theater. These vehicles are designed with protection capabilities that are virtually the same as Cougar. Thirty-eight of these vehicles were fielded to the Marine Corps. All Joint Explosive Ordnance Disposal Rapid Response Vehicle production deliveries were completed by June 2006. An additional seventy-nine Joint Explosive Ordnance Disposal Rapid Response Vehicles will be procured and fielded by January 2007 for our joint explosive ordnance disposal forces.

Near-Term Mine Resistant Ambush Protected (MRAP) Vehicles

There will be three categories of new near-term Mine Resistant Ambush Protected Vehicles. Category I, a Mine Resistant Utility Vehicle, will accommodate up to six personnel and will be employed in urban operations. Category II vehicles are similar to Cougar/Joint Explosive Ordnance Disposal Rapid Response Vehicles, will accommodate up to ten personnel, and will be multi-mission capable (convoy escort, troop transport, ambulance, explosive

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ordnance disposal). Category III, Buffalo, vehicles will be used for route clearance and explosive ordnance disposal missions.

These Mine Resistant Ambush Protected vehicles will have mine and underbody improvised explosive device resistance comparable to or better than that demonstrated by the Cougar. Furthermore, the ballistic and side improvised explosive device resistance capability will be equal to or greater than the High Mobility Multipurpose Wheeled Vehicle FRAG Kit 5 (as discussed on page seven).

To meet the operational commander's requirement of quickly providing Mine Resistant Ambush Protected vehicles to theater, the Marine Corps has awarded a sole source contract for up to two-hundred Category II and eighty Category III Mine Resistant Ambush Protected vehicles. Simultaneous with the delivery of these vehicles, the Marine Corps is leading a full and open competition for the procurement and delivery of up to 4,060 Mine Resistant Ambush Protected vehicles, 1,022 of which are for the Marine Corps. Of the remaining vehicles on this contract, 2,000 are being procured for the Army and 538 for the Navy.

MATERIAL HANDLING EQUIPMENT (MHE) ARMOR

Prior to the start of Operation ENDURING FREEDOM and Operation IRAQI FREEDOM I, the Marine Corps had no standard armor protection kits for our material handling and construction equipment. Since then, we have developed an armor solution that provides protection from improvised explosive devices, indirect fire, and other small arms fire to an operator conducting engineer missions. Completion of Material Handling Equipment Armor systems fielding is anticipated in March 2007.

Mine Rollers

We are also fielding mine rollers to our Marines. These systems are designed to protect convoys from the effects of pressure-plate activated mines and victim operated improvised explosive devices. The Lightweight Mine Roller system can be mounted on a variety of vehicles, including High Mobility Multipurpose Wheeled Vehicles, Medium Tactical Vehicle Replacements, and Light Armored Vehicles. It provides self-protection coverage for the host vehicle and a trailing portion to clear the center of the traveled lane for follow-on vehicles. The "mine roller" system can be used while traveling at tactical convoy speeds.

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The idea for mine rollers originated from Marines serving in theater. The Marine Corps Logistics Command quickly designed and fabricated fifty-three systems based on this idea in order to meet an immediate need. Naval Surface Warfare Center Panama City refined this concept and designed a smaller system that could be used on multiple vehicles. Design and production activities have since been turned over to industry to fulfill the requirement. A total of 407 systems will be procured, with completion of fielding to occur in February 2007.

GROUND MOBILITY

The Marine Corps' strategy since the start of Operation ENDURING FREEDOM/Operation IRAQI FREEDOM has been to provide immediate armor support to all High Mobility Multipurpose Wheeled Vehicle (HMMWV) variants and all of our other tactical vehicles, such as the 7-ton Medium Tactical Vehicle Replacement (MTVR). Our aim was to ensure that some level of protection be available to one-hundred percent of our forces in theater. Therefore, we embarked upon an evolutionary, or phased, approach. By continually incorporating direct warfighter input and lessons learned from in theater, we are employing very effective solutions to immediate threats given the current warfighting environment – solutions that have clearly already saved lives.

Marine Armor Kit (MAK)

Our High Mobility Multipurpose Wheeled Vehicle A2 variants are currently employed with integrated armor kits, known as the Marine Armor Kit. The Marine Armor Kit is a modular, bolt-on system that can be installed by Marines of any Military Occupational Specialty. The Marine Armor Kit, whose design incorporates lessons-learned from testing and in-theater operations, offers significant protection against the most prevalent threats, including small arms fire, roadside improvised explosive devices, and mine blasts up to four pounds. Because the Marine Armor Kit is kit armor, it is classified as Level 2 armor. Marine Armor Kit installations were completed in December 2005.

Medium Tactical Vehicle Replacement (MTVR) Armor System (MAS)

Similarly, for our Medium Tactical Vehicle Replacement 7-ton trucks, we developed what is known as the Medium Tactical Vehicle Replacement (MTVR) Armor System. This armor system is a permanent modification to our Medium Tactical Vehicle Replacements fleet, and is therefore classified as Level 1 armor. It is designed for the life of the vehicle (twenty-one

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years). The Medium Tactical Vehicle Replacement Armor System is capable of withstanding small arms fire, improvised explosive devices, and mine blasts up to twelve pounds. It consists of metal/composite panel armor, with separate cab and troop compartment kits, dependent upon cargo or personnel variants of the Medium Tactical Vehicle Replacement. The Marine Central Command installation requirement for the Medium Tactical Vehicle Replacement Armor System was completed in May 2006, nearly five months earlier than originally forecasted.

All Medium Tactical Vehicle Replacement dump and wrecker variants will also now be upgraded with the Medium Tactical Vehicle Replacement Armor System.

In the future, the Medium Tactical Vehicle Replacement will also be receiving blast protection upgrades similar to FRAG Kit 2 (discussed below) as well as composite materials inserted between the vehicle and the blast pan. Testing on the blast protection seats begins at the end of January 2007.

M1114 – Upgrade via Frag Kit 2 and Frag Kit 5

The Marine Corps' already fielded M1114 fleet, which was manufactured as an armored vehicle, is currently undergoing an upgrade with FRAG Kits 2 and 5. FRAG Kit 2 is designed to enhance ballistic protection in the front driver and A-driver wheel-well. Installation is underway and we anticipate completion in March 2007.

FRAG Kit 5 is designed to degrade improvised explosive device effects and reduce armor debris that results from overmatch. FRAG Kit 5 provides for replacement of doors and rocker panel assemblies for the M1114 fleet. The material focuses on the rolled homogeneous armor (RHA)/steel solution used and battle tested with the Marine Armor Kit on the High Mobility Multipurpose Wheeled Vehicles A2 fleet, with an emphasis on detailed integration with the M1114.

The existing M1114 high hard steel and aluminum rocker panel will be removed and replaced with a rolled homogeneous armor/steel rocker panel design, which will structurally tie into the roof support and allow heavier armored doors for the performance of day-to-day operations. This upgrade will also provide for replacing the hinge system on the rear door. Installation of FRAG Kit 5 is underway, with anticipated completion for installation in March 2007. The Marine Corps will continue to evaluate the U.S. Army's objective kit development and share information and lessons learned.

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All new deliveries of M1114s to the Marine Corps already have the FRAG Kits 2 and 5 integrated.

Additional M1114 Safety Enhancements

The Marine Corps is installing several near-term safety enhancements intended to improve occupant survivability. First among these is the M1114 Fire Suppression System. This system is intended to counter the threat of blast events and secondary fires. The Marine Corps began fielding Fire Suppression Systems in December 2006, which will continue into 2008.

We are also installing three point seatbelts in our M1114s beginning this month (January 2007) to encourage occupants to wear seatbelts. These seatbelts will allow for easy egress from the vehicle via a single-point quick release. Furthermore, they are specifically designed not to interfere with individual body armor and combat equipment. Delivery is expected to continue into 2008.

Finally, the Marine Corps has fielded Turret Gunner Restraint systems to our M1114 fleet as appropriate. This system has been incorporated to prevent gunners from being thrown from vehicles during evasive maneuvers/accident. Prior to these systems being installed, gunner ejections resulted in a high percentage of casualties. The Turret Gunner Restraint system was specifically designed to be worn over the Interceptor Body Armor system and it can also be adapted to other vehicle platforms.

Other Armor Upgrades

The Marine Corps' fleet of Light Strike Vehicles is scheduled to undergo an armor upgrade, called the Light Strike Vehicle Marine Armor Kit II. We estimate installations will begin in July 2007. This armoring upgrade is a complete redesign of the Light Strike Vehicle cab structure using a new frame with armor attachment points and integrated 360 degree protection. This upgrade will also provide for an integrated air conditioning system and additional overhead and underbody protection using the same wartime-proven high hard steel and rolled homogeneous armor that was used on the High Mobility Multipurpose Wheeled Vehicles Marine Armor Kits.

Vehicle Armoring in Closing

We have direct day-to-day communications with our U.S. Army counterparts to discuss our armoring strategies for our ground vehicles. We are committed to aggressively matching our equipment to changing threats. Our ability to rapidly modify our vehicle armoring systems is a

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testament to this commitment. The following chart depicts the current state of our vehicle armoring efforts as of 7 January 2007.

MARCENT Current Vehicle Armoring Posture as of 7 January 2007

**Since August 2004 all Marine Corps vehicles operating outside the
FOBs have been at Level II or better armor protection.**

	Vehicle Systems in CENTCOM AOR	OIF O/H	OEF O/H	HOA - Bahrain O/H	Total	Level I	Level II	Level III	Total Unarmored Vehicles not Leaving FOBs
	M1114	2221	43	0	2264	2264			
LTV	HMMWV	1846	5	41	1892	0	1873	9	10
MTV	5-ton	56	0	0	56	0	56	0	0
	MTVR	976	0	0	976	890	86	0	0
HTV	LVS	242	0	0	242	0	242	0	0

Note 1: MNC-1 and CJTF-76 have provided 344 M1114s to the MEF (Fwd) in OIF and 0 in OEF respectively

Note 2: 2,224 of the 2,767 (447 + 48 + 1302 + 524 + 446) M1114s under contract have been fielded; 173 towards PTP and HST

Level I: A wheeled vehicle that is manufactured as an armored vehicle Level II: HQDA and Marine Corps approved Add-on-Armor (AoA) kits Level III: Hardening of vehicles through fabricated armor (HQDA) approved steel
--

LTV: Light Tactical Vehicle MTV: Medium Tactical Vehicle HTV: Heavy Tactical Vehicle
--

PERSONAL PROTECTION

The wartime environment constantly changes and no one is better suited to determine what would be most effective in any given situation than the warfighter. Therefore, we provide solutions that can be configured to meet varying levels of threat. In the case of body armor, we provide every Marine with a modular ballistic body armoring system. Operational commanders are then able to determine what equipment their Marines will wear based upon specific mission requirements and environmental conditions. The following chart shows the procurement status of many of the personal protection items with which a Marine deploys.

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Item Name/Description	Funding (\$M)	Requirement	Quantity Delivered	Quantity to be Delivered	Fielding Start	Fielding Completed	Remarks
Modular Tactical Vest	\$33.70	60,000	0	60,000	Feb-07	Dec-07	Fully Funded
Enhanced Small Arms Protective Inserts (E-SAPI)	\$265.68	141,169	56,970	84,229	In Progress	4thQtr FY07	Fully Funded
Side Small Arms Protective Inserts (S-SAPI)	\$68.00	141,159	50,500	90,699	In Progress	1stQtr FY08	Fully Funded
Lightweight Helmet (LWH)	\$52.65	198,088	149,338	48,750	In Progress	1stQtr FY08	Fully Funded
QuadGard	Completed	4,500	4,500	0	-	Completed	1000 extra (QuadGard V) shipped FY07
Flame Resistant Organizational Gear (FROG)	\$44.00						\$24M Received via FY 07 Supplemental \$20M Received fm expanded Supplemental
Balaclava (Lightweight / Mediumweight)		60,000	0	60,000	Jan-07	Feb-07	Fully Funded
Long Sleeve T-Shirt		120,000	0	120,000	Feb-07	Mar-07	Fully Funded
Max Grip NT Gloves		60,000	0	60,000	Feb-07	Aug-07	Fully Funded
Combat Shirt & Trouser Ensemble		120,000	0	120,000	Mar-07	First 60K 1stQtr FY08	Fully Funded 2nd 60K - IDIQ Contract Pending

Vests and Armor Plates**Evolution from Outer Tactical Vest (OTV) to Modular Tactical Vest (MTV)**

The foundation for our modular ballistic body armoring system is the Interceptor Body Armor System. Combat operations over the last few years have highlighted a need for improvements our protective vest system. Therefore, we are transitioning from the Outer Tactical Vest to a new, more capable Modular Tactical Vest.

The design features of the replacement to the Outer Tactical Vest were developed from direct input from Marines from First and Second Marine Expeditionary Forces. From that input, Marine Corps Systems Command hosted an industry day with twenty different vendors to share with them the required capability to be filled. Eighteen of these participating vendors submitted a prototype solution for consideration. From these submissions, six candidate solutions were selected to be included in a Limited User Evaluation. Based upon the results of this evaluation, three candidate solutions were selected for a Field User Evaluation to determine the optimal solution. Based upon the outcome of this evaluation, the final solution was the Modular Tactical Vest.

This vest is virtually the same weight as the Outer Tactical Vest but it more easily integrates with our other personal protection systems and provides a greater modular load carrying capability than the Outer Tactical Vest. By working with our industry partners, we have been able to design the Modular Tactical Vest with considerations for balancing cost per vest with human factors, such as comfort, ease of use, wearer flexibility and mobility, and the most important factor -- protection for the wearer.

The Modular Tactical Vest accommodates use of our existing Enhanced Small Arms Protective Inserts and our Enhanced Side Small Arms Protective Insert plates. Other improvements in the Modular Tactical Vest over that of the Outer Tactical Vest include a quick release/cut-away capability, increased area of coverage, particularly for the lower back, and integrated wiring for routing radio cables. Overall, the Modular Tactical Vest design integrates state-of-the-art load carriage techniques to better distribute the combat load over the torso and onto the hips of the individual wearer, which increases the Marine's survivability.

The acquisition objective for the Modular Tactical Vest is 60,000 systems. Deliveries will begin in February 2007, with anticipated completion of deliveries in December 2007.

Draft 5**Enhanced Small Arms Protective Inserts (SAPI)**

Every Marine in theater today has the Enhanced Small Arms Protective Insert. These inserts provide more capable protection against a wider variety of small arms threats than its predecessor the Small Arms Protective Insert. Specifically, it protects against 7.62mm ammunition threats.

Initially, the Marine Corps fielded more than 32,000 Enhanced Small Arms Protective Inserts as theater-provided equipment. However, for future Marine Corps deployments, all personnel will now be issued the Enhanced Small Arms Protective Inserts prior to their deployment.

Enhanced Side Small Arms Protective Inserts (Enhanced Side SAPI)

Operation ENDURING FREEDOM/Operation IRAQI FREEDOM I/Operation IRAQI FREEDOM II is the first time in U.S. history that all wartime casualties have been autopsied by the Armed Forces Institute of Pathology (AFIP) to determine a cause of death. An evaluation of data collected from autopsies performed on Marines confirmed that side torso protection should be added to our modular personal protection system. Therefore, through a rapid development and fielding effort, we successfully satisfied the in theater requirement for 28,882 Side Small Arms Protective Insert systems early last year (2006).

During Spring of 2007, the Marine Corps intends to begin fielding Enhanced Side Small Arms Protective Inserts that will provide the individual Marine even more capable protection against a wider variety of small arms threats to the side of their torso.

Lightweight Helmet

The Marine Corps is committed to providing the best head protection available to our warfighters. The Lightweight Helmet provides the performance and combat protection capabilities required by our Marines. The Marine Corps' Lightweight Helmet weighs less than its predecessor and provides a high level of protection against fragmentation threats (0 degrees and 45 degrees obliquity) and 9mm bullets required by our Marines in theater.

Study results we have received since our last briefing to you in June 2006 have demonstrated that the Lightweight Helmet with the pad system provides greater protection against non-ballistic blunt trauma than the Lightweight Helmet with the sling suspension system. Therefore, the Marine Corps is now requiring the use of the pad system in our Lightweight Helmets. More than 150,000 Lightweight Helmets that have been fielded to our Marines are

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being retrofitted with the pad system by the Marine Expeditionary Forces. However, beginning this month (January 2007), all Lightweight Helmets produced by the manufacturer will be delivered with the approved pad system installed.

The transition to the pad system has created a significant challenge for the Marine Corps -- a change in tariff sizes. Prior to installation of the pad system, the predominant size for Lightweight Helmets worn by our Marines was a size "Medium". Now, with the introduction of the pad system, the predominant size is "Large" due to the extra space taken up by the pad system inside the helmet. While there are currently enough Lightweight Helmets across the service to support this size change for all deploying Marines, it will take about six months at the manufacturer's maximum capacity to achieve the adjusted tariff.

Extremity Protection**QuadGard**

The QuadGard system is designed to provide ballistic protection for a Marine's arms and legs when serving as a gunner on convoy duty. This system, which integrates with other personal ballistic protection equipment, such as the Modular Tactical Vest, Enhanced Small Arms Protective Inserts, and Lightweight Helmet, reduces minimum stand-off distances from the Marine to ballistic threats, particularly improvised explosive device fragmentation threats.

Flame Resistant Organizational Gear (FROG)

Each Marine's current combat uniform, if worn correctly, provides three seconds of protection against direct flame exposure. In order to provide an additional measure of protection against this threat, in February, the Marine Corps will begin fielding to all Marines deploying in theater Flame Resistant Organizational Gear (FROG). This system consists of an ensemble of clothing items (gloves, balaclava, long sleeved flame retardant shirt, combat shirt, and combat trouser). When worn as a system, this life-saving equipment provides four seconds of protection against flame exposure and mitigates second and third degree burns. Flame Resistant Organizational Gear provides protection that is comparable to the NOMEX Combat Vehicle Crewman/flight suit while at the same time weighing less and retaining less heat by using moisture-wicking material.

Personal Protection In Closing

It is of the utmost importance to the Marine Corps that we provide robust personal protection solutions to our warfighters -- and provide these solutions to them immediately.

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Working with our nation's dedicated manufacturing base, the Marine Corps continues to be able to provide the best possible levels of personal protection to known and anticipated threats; and we remain committed to aggressively matching our equipment to changing threats.

TRAINING & SIMULATION

We have seen how training and simulation activities aid our success on the battlefield. More importantly, training and simulation activities help save Marines' lives, and reduce injuries and the severity of injuries. Therefore, through a variety of means, the Marine Corps provides home station training and pre-deployment training to all Marines preparing to deploy.

Mojave Viper

Mojave Viper, based at Twentynine Palms, uses a 250 acre, four-hundred building facility that is dedicated to giving our Marines a realistic Iraqi training environment. Mojave Viper is the Marine Corps' most advanced and real-life pre-deployment training for troops bound for Iraq. There are two Iraqi village replicas – one village Sunni, one village Shi'ite – complete with a mosque, homes, stores, a city hall, and a police station.

To add to the realism of the training, the Marine Corps has contracted to populate each village with Iraqi nationals to test Marines' language and cultural skills. The Marines and "villagers" interact by negotiating to quell insurgency, and other real-life situations.

Each village is programmed to reflect the attitude of the region to which a specific Marine unit will be deployed. Furthermore, the capability at Mojave Viper exists to program new insurgent techniques into the training in as little as twenty-four hours after a new insurgent technique is identified.

Using all of the equipment we field to our Marines in theater, Mojave Viper activities also provide training in areas such as counter improvised explosive device tactics, convoy operations, Military Operations on Urban Terrain, squad rushes, interior guard, and standing post on vehicle and entry control points.

High Mobility Multi-purpose Wheeled Vehicle Egress Assistance Trainer (HEAT)

The High Mobility Multi-purpose Wheeled Vehicle Egress Assistance Trainer provides Marines with hands-on experience from within the High Mobility Multi-purpose Wheeled

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Vehicle on evasive maneuvers, reacting to different roll-over conditions, and egress rehearsal, and reinforces the importance of seatbelt/harness.

This training capability, based upon a theater need, was developed by Marine Corps Systems Command, and is being fabricated by Marine Corps Logistics Command. It immerses Marines in a replicated operational environment without risking the safety of the individual Marine, damage to operational assets, or potentially polluting/destroying the environment. This system also allows Marines to perform crew drills in the correct geo-spatial environment that are too dangerous to conduct in a live environment and execute crew drills that either exceed live safety limits or are constrained by environmental concerns. The High Mobility Multi-purpose Wheeled Vehicle Egress Assistance Trainer allows commanders to conduct pre-deployment, home station, and pre-convoy training in a safe environment.

The initial prototype was delivered to Twentynine Palms in June 2006. Additional systems will be delivered throughout the Marine Corps in 2007. Since its initial delivery to Twentynine Palms, more than 2,000 Marines have trained on this system.

Virtual Combat Convoy Trainer – Marines

The Virtual Combat Convoy Trainer – Marines system is a mobile, four truck trailer, self-contained, and self-supporting virtual simulation system that trains Marines in basic and advanced combat convoy skills using variable terrain and roads in a variety of weather, visibility, and vehicle operational conditions. It enables convoy elements and crews to train repetitively, safely, and efficiently in a realistic manner aboard a High Mobility Multi-purpose Wheeled Vehicle mock-up, using small arms and crew served weapons, eliminating the requirement for actual vehicles, weapons, ammunition, communications equipment, batteries, fuel, and maintenance items. Virtual Combat Convoy Trainer – Marines training includes practical application and evaluation of general tasks such as general convoy procedures, tactical driving, formation driving, hazard recognition, and immediate reactions. This trainer provides multiple training scenarios with real-time feedback, allowing Marines to repeat any given scenario as many times as needed.

One Virtual Combat Convoy Trainer - Marines is currently employed at Twentynine Palms as part of Mojave Viper and one-half trainers (two truck trailers) are employed at Reserve locations throughout the mid-Atlantic region. Since initial fielding in March 2005, more than 12,000 Marines have received training on this system.

Draft 5**Combat Convoy System (CCS)**

Operations in Afghanistan and Iraq have revealed an immediate need for a virtual convoy training simulation to build the training readiness of Marines involved with convoys who are also required to conduct close combat operations in complex, restrictive, or urban terrain against asymmetric forces. The Combat Convoy System will provide an immersive training environment for convoy operations, to include basic procedures for the driver, gunner, and passengers. It also includes weapons usage and target engagement, driver evasive action, command and control procedures within the vehicle and convoy, and general familiarity with terrain/environment.

The Marine Corps Systems Command is currently expediting the procurement action for the seven required systems. The contract award for the Combat Convoy System is expected in April 2007. The Combat Convoy System will be the next generation of the Virtual Combat Convoy Trainer – Marines.

CLOSING

Our enemy is constantly evolving and changing his tactics. We are meeting these threats to our Marines' lives by developing and fielding more capable systems faster and more efficiently. Since I have been at the Marine Corps Systems Command, I see that we are looking toward the future of force protection for our warfighters. The Marine Corps is not just looking to combat our current enemy's current capabilities, but also to prepare ourselves for future adaptations in enemy tactics.

For the time at-hand, we will continue to execute our current force protection requirements. The Marine Corps Systems Command will also execute any new, validated requirements or capability needs that are identified by the warfighter, making every effort to consider all available options as we work to find solutions to new threats, regardless of whether the solution can be found here or abroad. We will also look for ways to provide capability enhancements and opportunities for shortening delivery schedules.

We are doing everything we can to ensure the safety of our Marines by providing them with the best and most effective force protection equipment. The lives of our Marines, Soldiers, and sailors are a precious asset and their preservation through better and more capable equipment has been, and will always be, the highest priority of the Marine Corps Systems Command. Your support for continued robust, timely funds will position the Systems Commands throughout the

Draft 5

Department of Defense to continue with proactive approaches to ensuring our warfighters' safety.

We cannot afford to lose sight of the lessons we have learned about our enemy, and about our own capabilities, through the loss of American lives. With your continued support, we can ensure our Marines are ready for the current fight, as well as any future fights. Thank you.

**QUESTIONS AND ANSWERS SUBMITTED FOR THE
RECORD**

JANUARY 16, 2007

QUESTIONS SUBMITTED BY MR. TAYLOR

Mr. TAYLOR. What I would ask of you are some milestones by month that you expect to be met?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. What novel armor solutions are currently out there? Are the best options still aluminum and steel?

General BROGAN. There no armor technological breakthroughs in the near term that will defeat the full spectrum of the threat environment. All armor design packages necessitate compromises between tactical mobility, survivability and specific mission requirements. However, the Joint IED Defeat Organization (JIEDDO) is funding the Army Research Laboratory's effort to improve the ability of armor to mitigate threats faced today in theater. Current avenues of investigation include armor composition, composite packaging and vehicle shape. Additionally, The Defense Advanced Research Projects Agency (DARPA) is currently conducting the Armor Challenge to identify revolutionary and promising new armor systems for military vehicles. In conjunction with the Army and Marine Corps, DARPA is developing the Hardwire DARPA Armor Program to provide a composite armor door kit for the current generation HMMWV.

Current and forecasted armor solutions require a combination of technologies including armors made from Rolled Homogenous Steel, aluminum, ceramics and composite materials.

Mr. TAYLOR. Are any MAK HMMWVs with high back/troop box being used outside the wire?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. What vehicles are currently used to transport troops outside secure forward operating bases?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. Could you use the MTRV in a "gun truck" capacity to serve as interim vehicle while MRAP is being procured?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. Do these theater requirements take into account the recent "surge" of an additional 4,000 marines to Iraq?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. What are the advantages of V-shaped hulls and what other concepts have been developed that offer improvements over the UAH (include assessments of foreign vehicles if they can make them)?

General BROGAN. V-shaped hulls mitigate the blast effects of an underbody mine. Other factors which complement the shape of the hull include ground clearance, armor composition, and vehicle weight.

When designing vehicles to counter IEDs, tactical mobility and survivability are the primary factors that must be addressed. Both industry and Government are exploring all technologies which improve crew survivability while maintaining tactical mobility to develop the Joint Lightweight Tactical Vehicles (JLTV) as the replacement for the HMMWV. This technology requires significant research and development.

Mr. TAYLOR. What is the current theater policy for vehicle use outside secure operating areas? What types of vehicles are allowed these areas?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. How are you planning on getting the MRAP vehicles to theater? Airlift or by sea? Have you established contact with TRANSCOM? Do you have enough lift assets available?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. How long will it take to ship MRAPs by sea?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. How much confidence do you have in the industrial base's ability to rapidly produce Cougar/Joint EOD Rapid Response Vehicles (JERRV)? There have been problems in the past, how have these problems been solved?

General BROGAN. The potential for the industrial base to meet our growing requirement is encouraging.

With respect to Force Protection, Incorporated (FPI) and the delivery of Cougar/JERRV MRAP vehicles, the production rates have indeed been limiting. The recent teaming between FPI, is helping to deliver the desired vehicles on or ahead of schedule.

Mr. TAYLOR. In terms of providing additional wheel well protection to Up-Armor HMMWVs. How can we speed up this production and installation process? Why not provide this armor to every Up-Armor HMMWV?

General BROGAN. Our Fragmentation Kit 2 effort is on schedule and with installs projected to be finished during March. The kit is a unit level install based on the local commander's priority of effort. All Fragmentation Kit 5s have been fielded in-theater with installs expected to be completed during March. The HMMWVA2 with MAK already have the 3/8 RHA wheel well shield installed.

Mr. TAYLOR. Can you briefly discuss Distributed Operations and the rationale behind this concept? How will this impact force protection equipment requirements in theater?

General BROGAN. Distributed Operations (DO) is an additive capability that enhances application of the Marine Corps' fundamental war fighting philosophy of maneuver warfare. It is a technique applied to appropriate situations wherein units are separated beyond the limits of traditional direct fire mutual support. The decision to employ DO techniques rests with the commander and is based on his assessment of the mission, threat, terrain/weather, and troops/fires support available. DO is practiced by general purpose forces, operating with deliberate dispersion, when necessary and tactically prudent. It requires decentralized decision-making and, therefore, relies on the ability and judgment of Marines at every level. DO has already had a positive impact on small unit leader training and education, making Marine tactical units more effective on the modern combined arms battlefield, Phase 0 through Phase 5.

The rationale behind DO rests with an emerging security environment that demands multipurpose Marine forces capable of operating with greater autonomy across an expanded battle space, in all six phases of a joint or coalition operation. Our adversaries' ever-increasing gravitation toward irregular warfare and the continually increasing lethality of modern weapons have resulted in a greater need for dispersion. Commanders are faced with larger frontages and complex areas of operation, with potentially fewer forces. Our enemies have demonstrated a propensity to disperse, fight in complex terrain (urban, mountain, jungle), and complicate our operations by engaging in war among innocents. DO provides Marine Corps forces an additional means to effectively operate in this emerging environment.

The Marine Corps views DO as evolutionary, Marine units past and present have employed the dispersion espoused by DO to gain tactical or operational advantage in specific situations. Circumstances now dictate that this capability be institutionalized across the Marine Corps to allow for even wider application. The Marine Corps Combat Development Process continues to identify the necessary enhancements in manning, training, and equipping to reduce or eliminate the barriers that prevent current commanders from employing the level of unit dispersion the modern battlefield often requires. To facilitate DO, enhancements will be required across the battlefield functions of maneuver, fires, intelligence, command and control, logistics, and force protection.

DO has already enhanced the most essential ingredient of individual force protection, small unit leadership, by requiring an increased level of training for the Corps' infantry non-commissioned officers. In addition, dispersion on the battlefield will enhance overall force protection by complicating our enemies' ability to target large bodies of troops and likely routes of movement. From an equipment perspective, there will be little impact on force protection equipment requirements in theater, as DO does not alter the basic organization of tactical units. While DO enhancements will result in an increase in tactical vehicles for our infantry battalions, these vehicles will be armored versions of the Marine Corps enhanced HMMWV. Ultimately, the fielding of the Joint Light Tactical Vehicle will supersede this requirement.

Mr. TAYLOR. How are you going to resource the surge increase?

General BROGAN. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. Will MRAP vehicles be rated for off-road use?

General BROGAN. Yes, MRAP vehicles will be rated for off-road use.

Mr. TAYLOR. What's the process in validating joint urgent operational need statements in theater? What's the average timeline for validation, production, and fielding.

General BROGAN. The Joint Urgent Operational Need Statement (JUONS) is the process that provides a mechanism for Joint Commands to elevate their urgent needs to the Joint Staff.

Validation process: The JUONS must originate in a joint command in theater. For Marines, this command is typically Multinational Forces—West (MNF—W). MNF—W validates and approves the request for the capability need and forwards the request to Multinational Coalition—Iraq (MNC—I). MNC—I validates and approves the request and forwards the capability need to the Central Command (CENTCOM) staff. CENTCOM validates and approves the request and forwards the capability need to the Joint Staff. The Joint Staff uses the Functional Capabilities Boards and Joint Rapid Acquisition Cell to facilitate the funding, procurement, and fielding of the validated capability.

Average timeline: The timeline associated with the validation, production, and fielding of JUONS varies with each individual requirement based on cost, availability (commercial of the shelf, government off the shelf, yet to be developed), and complexity of the validated materiel solution. The notional timeline for the staffing process once the JUONS arrives at the Joint Staff requires 10-39 days. At the end of this time period, the JUONS is handed to the lead Service for procurement. Procurement timelines vary according to the amount of development, integration and production capability that a solution requires.

Mr. TAYLOR. When do you expect to achieve the theater requirement for the Modular Tactical Vest? How many vendors will produce this vest?

General BROGAN. The Modular Tactical Vest will achieve the theater requirement of 60,000 by September 2007. One vendor, Protective Products International, manufactures this vest.

Mr. TAYLOR. What has been the feedback from theater regarding the pad suspension systems for the Lightweight Combat Helmet (LWH)? Do Marines like the system?

General BROGAN. The Program Manager for Infantry Combat Equipment (PM—ICE) has a helmet survey that is still being developed/revised and expects to post to the PM—ICE website in mid-March. At that time, PM—ICE will have the capability to gather feedback from theater regarding the pad suspension systems for the Lightweight Combat Helmet (LWH) and to further determine acceptance by Marines.

Mr. TAYLOR. Does the Marine Corps have a requirement for a vehicle mounted active protection system?

General BROGAN and General ALLES. Yes. The Marine Corps has identified a requirement for Active Protection Systems (APS) to enhance force protection and vehicle survivability capabilities of vehicles in the 14 to 35 ton weight class against Rocket Propelled Grenades (RPGs) and Anti-Tank Guided Munitions (ATGMs). Specifically, Operating Forces have expressed a need to defeat or reduce the effects of RPGs through two Urgent Universal Need Statements. Additionally, the Light Armored Vehicle and Expeditionary Fighting Vehicle operational requirements documents identify RPG and ATGM defeat as Objective requirements; and system threat assessments for the vehicles in the specified weight class point to RPGs and ATGMs as significant threats. In support of the identified requirement, Marine Corps Combat Development Command (MCCDC) conducted an APS Functional Solutions Analysis (FSA) to address this force protection/vehicle survivability gap. MCCDC developed and assessed all feasible Non-Materiel Approaches capable of mitigating the gap. As part of the FSA, the team also conducted an Analysis of Materiel Alternatives (AMA) to assess the capabilities of candidate materiel solutions. This analysis, conducted in the spring and summer of 2006, developed the following categories of gap mitigation:

- Detection Avoidance
 - Mobile camouflage systems
 - Thermal signature management
- Hit Avoidance (Soft-Kill Systems)
 - Soft Kill Systems do not physically intercept the threat (e.g., electronic warfare)
- Hit Avoidance (Hard-Kill Extended Intercept)
 - Integrated Army Active Protection System

- Trophy
- Iron Fist
- Hit Avoidance (Hard-Kill Close In Intercept)
 - Close-In Active Protection System
 - Full-Spectrum Close-In Layered Active Protection Shield
 - Close-In Counter Munition
 - Quick Kill
- Hit Avoidance (Hard-Kill Novel Approaches)
 - Novel Approaches intercept the threat by means other than missile-to-missile defeat (e.g., Linear Shaped Charge or Nets)

Additionally, the AMA evaluated Passive Penetration Avoidance (e.g., slat/bar armor, ceramic armor, composite armor), Active Penetration Avoidance (e.g., Explosive Reactive Armor, Non-explosive Reactive Armor, Electromagnetic Reactive Armor), and Kill Avoidance (spall liners, fire suppression systems, ammunition compartmentalization) alternatives to gap mitigation.

The output of the FSA and AMA was a draft APS Initial Capabilities Document waiver letter in August 2006. The FSA concluded that no single system possessed all the required capabilities, but recommended further study of the following categories of RPG and ATGM defeat mechanisms: Soft-Kill/Novel Approach Combination, Hard-Kill (Novel Approach), Hard-Kill (Extended Intercept), Hard-Kill (Close-In Intercept), and Active Penetration Avoidance. Of particular note, the analysis and participating subject matter experts identified significant concerns with the fratricide threat from Hard-Kill APS solutions. The Marine Corps intends to further refine the future APS requirement in the specified class of vehicles and will seek funding to support this effort through upcoming budget cycles.

Mr. TAYLOR. What is the Marine Corps official position regarding the Trophy active protection system?

General BROGAN and General ALLES. The Trophy Active Protection System was one of four Hard-Kill (Extended Intercept) systems assessed during the Marine Corps Combat Development Command (MCCDC) sponsored APS Functional Solutions Analysis (FSA) and Analysis of Materiel Alternatives (AMA) in the spring and summer of 2006. The APS FSA resulted in a draft Initial Capabilities Document (ICD) Waiver Letter and recommended further study of the following categories of RPG and ATGM defeat mechanisms: Soft-Kill/Novel Approach Combination, Hard-Kill (Novel Approach), Hard-Kill (Extended Intercept), Hard-Kill (Close-In Intercept), and Active Penetration Avoidance. The inherent risk of fratricide with all of the Hard-Kill APS solutions will be a critical component of future analysis. The Trophy Active Protection System will remain one of the candidate materiel solutions as the Marine Corps continues to refine the APS requirement for tactical vehicles.

Mr. TAYLOR. Is the Marine Corps experiencing high numbers of rocket propelled grenade attacks in their respective area of responsibility in Iraq?

General BROGAN and General ALLES. [The information referred to is classified and retained in the committee files.]

Mr. TAYLOR. What is the situation in regards to equipping Iraqi forces and what will the US provide?

General BROGAN. [The information referred to is classified and retained in the committee files.]

QUESTIONS SUBMITTED BY MR. ABERCROMBIE

Mr. ABERCROMBIE. So there is not an issue. When we are talking about the equipment here, we are talking strictly the Marines and the Army. We are not talking about equipping the Iraqi forces of various origins? Then how are you going to work together? I am not quite sure how this is supposed to work then out of these police stations—I am not trying to trick you—because this is happening now. How does what you are planning to do right now work into what is expected of you in the next six weeks to six months in terms of the logistics, or is that yet to be determined?

General BROGAN and General ALLES. The Marine Corps conducts combined Coalition and Iraqi Security Force (ISF) operations throughout the Al Anbar province. We employ embedded Transition Teams (TT) who serve alongside the ISF in an advisory and training capacity. Over 700 of the nearly 28,000 Marines deployed in support of Operation Iraqi Freedom or Operation Enduring Freedom are part of the security TT in Iraq and Afghanistan working to increase the proficiency, combat effectiveness, and internal security capacity of these countries. The Marine Corps will prepare over 80 teams during the current Fiscal Year for tasks as military, border security and national police transition teams.

While the USMC Fiscal Year 2007 Supplemental provides funding for Marines based on plans to support the training teams, it does not include any requests for equipment for Iraqi or coalition forces. The Department of Defense ISF Fund received \$1.7B for procurement and fielding of equipment as well as to fund training needs of Iraqi forces.

Mr. ABERCROMBIE. What is the relationship of them in terms of budget and the kinds of things we are talking about here, what is the relationship to equipping and working with Iraqi allies or Iraqi cooperating forces, and do we need to cover that while we are covering what you are doing? (page 82)

General ALLES. The Marine Corps budget does not contain any funding for the Iraqis.

QUESTIONS SUBMITTED BY MS. BORDALLO

Ms. BORDALLO. Do you have any idea how many lives we have—now, I have visited the hospitals in Germany and Walter Reed and Bethesda, and I have noticed that most of the injuries are to the limbs, not to the torso, and I know that must be because of the armor. So do you have any idea what the percentages are of those during previous wars, you know, as being—as this war now with the enhanced armor?

General BROGAN. Navy-Marine Corps CTR Deployment Health Database Naval Health Research Center

The anatomical distribution of combat wounds during major U.S. conflicts is shown in Table 1. Extremity injuries comprised the majority of wounds in all conflicts and are relatively stable. There are a reduced proportion of wounds to the chest and abdomen in the current conflict compared to previous conflicts.

Although injury severity was not objectively measured during WWII, Korea or Vietnam, during OIF patients with extremity wounds were more severely injured overall compared to wounded combatants without extremity injuries.¹ It is also important to note that head, face and neck wounds are higher in OIF compared to other major U.S. conflicts.² This increase may be because of new injury patterns resulting from improvised explosive devices and lack of protection for the facial region.

Table 1. Percent wounds (fatal and nonfatal) by body region.

War	BODY REGION			
	Head/Neck	Thorax	Abdomen	Extremities
WWII ¹	25%	13%	9%	53%
Korea ²	19%	8%	7%	53%
Vietnam ³	15%	8%	5%	55%
OIF ^{4,5}	29%	5%	6%	51%

References

1. Mohrle CR, Wade AL, Galarneau MR, et al. Extremity injuries among U.S. combat casualties during Operation Iraqi Freedom: a report from the Navy-Marine Corps Combat Trauma Registry. Naval Health Research Center Report (under review).
2. Wade AL, Dye JL, Mohrle CR, Galarneau MR. Head, face, and neck injuries during Operation Iraqi Freedom: results from the U.S. Navy-Marine Corps Combat Trauma Registry. *J Trauma*, 2007;63:836-40.
3. Beebe GW, DeBaakey ME. *Battle Casualties*, Springfield, Ill. Charles C Thomas, 1952, Chapter 5, pp. 165-205.
4. Reister FA. *Battle Casualties and Medical Statistics: US Army Experience in the Korean War*, Washington DC, The Surgeon General, Department of the Army, 1973, Chapter 1, pp 35-54.
5. Whelan TJ, Burkhalter WE, Gomez A. *Management of wars wounds*, edited by Welch CE, *Advances in Surgery*, Vol 3, Chicago, Ill, Year Book Medical Publishers Inc, 1968, p 249.
6. Unpublished data, US Navy-Marine Corps Combat Trauma Registry, 1 March 2004 to 28 February 2005.

QUESTIONS SUBMITTED BY MR. COURTNEY

Mr. COURTNEY. Another question I have which is an issue that seemed to be out there in the public realm over the last couple of years or so which is about families who are trying to use their own resources to get their family members body armor that otherwise might not have been available. I know legislation was passed to provide for reimbursement for those families, and it seemed that there was difficulty trying to figure out how to get those payments where they—I wondered if you could give me a quick sort of update, and I apologize not knowing the latest on that information.

General BROGAN. The Marine Corps has received nine claims for reimbursement. Six of these claims were approved and paid. Two of the six claims were for body armor.

