

**Office of the Commandant of the Marine Corps**

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GENERAL JAMES AMOS: Wow, what a great sound system. We can't afford anything this nice in the Marine Corps. (Laughter) I always get a little bit nervous when I find out that George is actually introducing me. We go back a long ways...

Thanks, George. And, Ladies and gentlemen, I'm excited about being here, and... this is a friendly audience for me. There's a lot of folks out here I know. I know from my days -- as George was saying -- from my days out at Quantico, I was the head of Requirements, and in that, the Warfighting Lab worked for me, and it was just a whole lot of things going on. We were in the transition to try to really redefine our requirements and make sure that we had the right processes in place, and then I became the Assistant Commandant and became a voting member of the ONR team, so -- so I know many of you. It's like coming home, so I'm glad -- I'm glad to be here today, and I'm going to do my best to not geek out on you here and then get lost in all the details of all the ongoing S&T programs in the Marine Corps.

I do want to give you my view as the Commandant and a Service Chief on what we need. I'll talk to you about a couple of success stories... maybe give you a few taskers out there because you're really the 'who' in bringing solutions to our young Marine warfighter on the ground. I'm also acutely aware that I'm the only thing that stands between you and lunch, and I intend to keep you on time, so I ask that you buckle your seatbelts.

I know that many of you in the audience and your tremendous efforts to support our warfighters and what you're doing on a daily basis and all that means a significant amount to me. Up front, let me clarify who I'm talking about when I mention the young warfighters. I'm talking about your primary customer. That young man or woman... it could be both, but they're 19 years old or 20. They've volunteered to serve his or her country, and this Marine is willing to live a Spartan lifestyle and accept the risks of hardship while operating in an uncertain security environment... all to protect our national interests. This Marine is typically in one of three phases; either in training to respond, forward deployed conducting exercises with one of our many partnered nations or is indeed, in fact, in harm's way actively defending America's interests abroad. This is the Marine that you -- that your hard work, your intellect and your inhibition gives the edge to.

You, the researchers, the engineers, the techies, the big and small industries along with our military and our civilian folks from the Office of Naval Research and the Marine Warfighting Lab help equip those young warriors with gear that will enhance mission effectiveness, and in some cases, even save their lives. As the official 'dad' of the Marine Corps, I'm especially appreciative of all the work that you do to take care of your customers and my Marines. You heard me briefly mention the security environment that our warfighters operate in. You know, it's not getting any friendly out there. All you have to do is read the daily newspapers, watch what -- what -- watch what took place even in the -- and even in the debates last night and last week among our two Presidential candidates to know that the world is a tough neighborhood right now.

You know it's not getting any friendly as I said, and from the uncertain global economy, to the proliferation of non-state extremist in possession of extremely dangerous weapons and destructive capabilities, to the competition within cyberspace, destabilizing events around the world continue to underscore the importance of our nation -- that our nation maintains forward deployed and ready expeditionary forces. The Marine Corps is, in fact, that force ready to

respond to today's crisis with a force that we have today and to do it today, not tomorrow, not a week from now but today. We serve as a hedge for our nation's leadership. We buy time with our presence, so that our government can build consensus with allies and with partners, such as in the case of the no-fly zone with Libya. We explore all elements of our national power and then implement plans for operations as required.

Just last month at the Naval War College, the Navy and Marine Corps participated in the very first Naval Services war game to determine how we could quickly aggregate a large Naval force in response to a global crisis. Even the ties between ONR and our MCWL are telling of our partnership. Brigadier General Mark "Not So" Wise sitting down in the front is the Commanding General of the Warfighting Lab and is Vice Chief to Rear Admiral Matt Klunder, who's sitting down in the front, the Director of ONR. Together they form a formidable Navy and Marine Corps team. So as we continue to work as a team, I ask that you do the same, always keeping in mind that the science and technology you develop is for the primary customer that you see on the screen... the members of America's premier crisis response force.

I want to pick back up with your customer for a moment and take this one step further. I want to help you see things from the warfighter's perspective. Combat is a complicated business. It takes place in a chaotic, nasty and uncertain environment. More often than not there is -- there is either a sensory overload or a sensory deficit, seldom is it -- and rarely is it in between. This environment itself isn't one that can be changed by science. It simply cannot, nor can we, change the nature of the conflict with technology... but what we can attempt to do is better equip our Marines and sailors to be able to operate in that environment. Regarding the equipping of our Marines, most of you have heard of my four priorities. They remain the same since I issued my Commandant's Planning Guidance two years ago. While all our priorities are based on taking care of Marines, the priority that directly relates to the value I place on S&T is we will rebalance our Corps, posture it for the future and aggressively experiment with an implement, new capabilities and organizations. That's your backyard.

Well, what do I mean by that? The big picture, I need the S&T community to help us think differently about how we make -- how we can make our distributive forces more capable and more expeditionary for the future. As we optimize and modernize, we need to focus on lightening the load, shedding the weight and size from our combat systems. At the same time, we need S&T to increase our Marine survivability, our maintainability, their reliability and last but not least affordability. With that said, I want to focus in on a few functional areas and share what we, as a Corps, need from S&T. In the intelligence function, our fuse intelligence, surveillance and reconnaissance data and capabilities must be usable at the company and platoon levels to support distributive forces operating over historically long distances. The key technologies are our improved sensors of all types that provide enduring coverage of the battle space. We need to be able to not only see where Sitting Bull is over the horizon, but we need to be able to figure out what to do about it and then be able to pass that along to our brothers and sisters on the battlefield. Imagine if General Custard had been able to determine Sitting Bull's location. I bet things would've turned out considerably different for the 7th Cavalry.

Bottom line, we must provide information with vantage to the end user in the form of timely, clear and concise, actionable intelligence. One of the best examples I can reference here is the Keyhole II Optic System. We've had great feedback from our operators on this suite of

optics and significantly enhances a unit's ability to collect information, to gain positive identification of the enemy and to accurately employ supporting arms and reduce the weight in gear that an individual must carry. In your customers' words, this is a quote, "the Keyhole II is the best handheld thermal system that I used during the entire deployment." That's the kind of feedback on a gear that you and I like to hear. On lightening the individual Marine load, we also need to lighten the cognitive load. As data and communications technologies continue to improve, the volume on complexity of information potentially available to the warfighter threatens to paralyze a decision-making tempo. Information architectures must be thoroughly designed to make information available horizontally across multiple domains as well as vertically across command structures while also maintain security. Large amounts of data must be filtered and packaged into useable information that is effectively delivered in tailored fashion to the appropriate user and with more intuitive human computer interfaces.

In the command control warfighting function, we must continue to make inroads towards long-range communication and command control capabilities that are resilient and not reliant on one method of transportation. Recent experiments by the Marine Corps Warfighting Lab during exercise Bold Alligator 12, demonstrated the capability through S&T solutions for dismounted Marines and sailors to pass voice and data communications upwards of 165 miles inland. Exercises like Bold Alligator and Dawn Blitz out on the west coast are exactly what we need to accurately test our S&T in realistic and joint environments. In exercises and in real-world operations, we are headed in the direction of more support to maneuver in logistics coming via unmanned systems.

To effectively lighten the Marines' load, we are making progress in this area with the K-MAX unmanned cargo helicopter now operating in Afghanistan. It can carry 4,000 pounds at 15,000 feet for many miles to forward locations. In many cases, K-MAX has replaced ground convoys and eliminated significant risk of IED attacks against our Marines, and as importantly, it has served to thoroughly confuse the enemy. ONR's continuing development of more advanced cognitive autonomy software which will support many types of unmanned platforms and soon enable an unskilled operator to coordinate the delivery of combat supplies to locations of choice using only a smartphone-like device. The Warfighting Lab continues experimentation with tactical unmanned ground vehicles as logistics platforms that will also lighten the load and reduce the risk for our Marines.

Last month I had the opportunity to observe the Legged Squad Support System, the LS3, the son of Big Dog, at a demonstration at Fort Meyer. I was amazed at the stability of this robotic mule that is designed to carry up to 400 pounds. It has enough fuel for missions covering 20 miles and lasting 24 hours and can follow our Marines in complex terrain where vehicles cannot go.

Moving to force protection, this is an effort that must be prioritized. Decreasing the weight of our Marines, personal, protective equipment and their individual equipment will increase their maneuverability and allow speed then to provide even more security. The challenge remains for S&T to find new fabrics and materials to reduce the weight and retain and/or improve the level of protection. IEDs will continue to be our adversary's go-to weapon of choice. We will continue to invest in affordable ways to detect and neutralize this threat. While the truth remains that most IEDs are detected by the individual Marine and their instincts, S&T

provides various capabilities to assist our warfighters in detecting, jamming and pre-detonation of this threat. I spoke of the need to discover a way to pre-detonate the IED at DARPA's annual convention in Long Beach five years ago. There were over 4,000 of your S&T brothers and sisters in attendance that afternoon. To date, this challenge has gone unmet. The fact that it's not been solved doesn't mean that it can't be. From my perspective, this needs to be a top priority in the S&T world. If you take away the IED, you'll have successfully neutered today's and perhaps tomorrow's most likely enemy.

As you know, reusable energy has been a focus of Secretary Mabus and of the -- both the Navy as well as the Marine Corps. Our Expeditionary Energy Office led by Colonel "Brutus" Charette has aggressively led Marine Corps efforts in this area. The Expeditionary Forward Operations Base or the XFOB team, with the help of large and small industries alike, has demonstrated innovative energy capabilities including hybrid power distribution systems, solar power, improved battery and technologies in small unit water purification unit capabilities. Over all these systems significant -- over all, these systems significantly reduce power consumption, allow for improved distributive operations and require less logistical support on the ground. These technologies have been used successfully by our Marines in Afghanistan, and they love them. I get a 'two-fer' out of this, as they also maximize the finite amount of space aboard amphibious shipping. I needed more development in these areas as we work to reinforce our expeditionary characteristics.

Another success story in an area that is very important is our increasing ability to redefine the 'golden-hour.' In the past decade of combat, we have shortened the CASEVAC timeline. As we broaden the range of our distributed operations, the distance to trauma-level care also increases, as such, our medical research community needs to explore more medical technologies that will help us improve timely trauma diagnosis, hemorrhage control and a reduction of blood loss from severely wounded casualties.

Lastly, I'd be remiss if I didn't mention the importance of continued development and fielding of non-lethal weapons. Not just because I'm the Executive Agent of the Department of Defense with regards to non-lethal weapons, but because these capabilities truly help minimize casualties while providing escalation of force options and an assist to our national strategic objectives. I encourage your efforts in the experimentation of this technology to help us achieve scalable weapons which our warfighters can use, commensurate with a mission and the environment. As we drawdown in Afghanistan and look to the conflicts of tomorrow, our use of non-lethal weapons coupled with building partner capacity missions and militant mil exchanges, strategically communicates our commitment to protect innocence and reassures our strategic friends and our allies.

In closing, I want to remind everyone that next month our Corps celebrates its 237th birthday.

AUDIENCE MEMBER: Ooh-rah. (Laughter)

GENERAL JAMES AMOS: Since our earliest days, we have been known as the innovators. In modern Marine history and especially in the last decade plus of war, we have made significant gains in equipping our warfighters with cutting-edge technology. I want to personally thank all

of those in attendance today who have contributed to that. Your S&T efforts continue to save lives and make our warfighters more mission-capable. Thank you for remembering your primary customer and who he or she is. Don't ever forget it. Let me once again thank Admiral Klunder and "Not So" for inviting me here as well as the entire ONR team. Thank you all for your amazing support to our men and women in uniform. I appreciate all your work and Semper Fidelis. And I'll be happy to take your questions. We've got about seven minutes.

MAN: Yes, sir. Thanks very much, sir. (Applause) And who's got the first question for the Commandant? I'm looking; we've got microphones available again, if we use those.

GENERAL JAMES AMOS: Okay, I'm out of here. (Laughter)

MAN: You must've said it all, sir. Any questions at all?

GENERAL JAMES AMOS: There's one all the way in the back.

MAN: All the way in the back, yes, sir.

[CHRISTINE HACKMAN]: Good morning. Christine Hackman from -- I'll just ask could you say a little more about the non-lethal weapons for those of us who aren't that familiar with them?

GENERAL JAMES AMOS: Yeah. The question was could I say more about non-lethal weapons, and -- and I'll be happy to. Obviously, there's a stable of them out there, some -- some more contentious than others. I mean the obvious ones, the easy ones are the things that trip up vehicles and trip up people and delay -- delay people. Those are the easy ones, and then you've got the -- you've got the rubber bullets and things that are actually out there in police forces and -- and in military forces around the world. Where -- where you really get into non-lethal weapons that -- that people step back and look at and they go, 'now wait a minute, this is -- this may be something that I'm not willing to -- to use' would be something like our -- our anti-denial system that we've got, and it actually -- to include a whole host of folks, to include General Allen when he came back from one of his visits. He actually went out and -- and stood out there and felt the effects of this. So it's -- it's a -- is the technology that absolutely just debilitates the attacker or the crowd or the whoever but has not lasting effects, and it has no -- it has no injurious effects or anything like that.

So there's -- there's a piece of -- of non-lethal weapons that just kind of make sense and it's probably already out there. Then there's a piece that I'm asking you to look at that will actually stop behavior and actually alter behavior, and I don't mean behavior like permanent behavior. I mean the behavior that's taking place on the ground. It could be crowds. It could be aggressive behavior. It could be something along those lines. Something that would -- would stop whatever was going on that needed to be stopped but temporally... and then goes away, and that's what I'm talking about. I think there's more to be done out there. I -- I regret that we are -- we are -- we've -- we've kind of taken the -- the denial system and said well, that's maybe too cosmic to use. I think there's cases where it can be used, and I think there -- there are places where, quite frankly, if you could just stop people and with -- with no -- with no lasting effects. I mean none.

You've done more probably for quelling a situation and kind of dialing down the -- the tempo of what might be taking place, so I think there's more to be done in -- in those kinds of areas. Like I said, the obvious ones are the ones that trip cars and people and stop and blow tires and things like that.

MAN: Sir, we've got a question right up front, right here.

[AUDIENCE MEMBER]: Rick Lindsey... I had a question for you about the -- the looming fiscal austerity picture for the Marine Corps and what effects it will have on the Marine Corps itself and science and technology.

GENERAL JAMES AMOS: As it relates to S&T or just in general?

[AUDIENCE MEMBER]: Well, both, sir.

GENERAL JAMES AMOS: Yeah. I'm -- I'm -- thank you. I'm -- I'm very concerned about it. I've been public about being concerned about it. The other members of the Joint Chiefs have, so nobody -- the Chairman has, the Secretary of Defense has as you take a look at sequestration, and that's the -- I mean that's kind of the -- the 10,000-pound gorilla in the room right now. Nobody quite knows what's going to happen with that. The thing I'm -- I'm reminded of and I've been reminded of this a couple of times is that it's law. This isn't -- this isn't something that's just out there that is a -- something that was just it could happen. I mean if something doesn't physically take place to change it, it's -- it's law, and so it will take place on January the 2nd, so I am concerned about that, and there will be effects of that. And -- and while we've not planned for that in the Department of Defense, we've not planned for that individual in each service, we've certainly have looked at it and have a sense for kind of what the impacts might be in general terms, so that is concerning me.

If that happens, that's going to dramatically change the -- the capacities and in some cases, the capabilities of the services. In my service, we'll probably have the most significant effects. We're the smallest service of all, and you know, I always stand up and say I can't afford a good microphone and all that stuff, but the truth of the matter is -- is that even when you include what we call blue in support of green, which is -- which is Naval Aviation and you put it into Marine Aviation, so it's the airplanes, it's Nav Air, it's the -- it's the Naval Safety Center. You add that in there, then you add our contribution to Naval ships, and Naval amphibious shipping, which is -- which is for us. I mean it's for our nation but it's for us, so you add that in and you take the doctors and the nurses and the Corpsmen and the Chaplains and the RPs, all this stuff that the Navy provides us, if you add all of that to our budget, we are 8% of the total Department of Defense budget. That's it, 8%.

So -- so because we are so small, you take something like a sequestration and for us it will have disproportionate effects on the United States Marine Corps. And what do I mean by that? It will end up -- it could because we buy small numbers of things instead of large -- 40, 50,000 vehicles, we only buy a small amount. Not only because that's all we can afford but perhaps that's all we need, but -- but now all of a sudden you take and you lay in a significant bill, a fiscal bill, a financial bill, into the procurement account and now I'm reducing that number to a point where it becomes cost-prohibitive to buy it at all. And you understand exactly what

I'm talking about. I'm talking about numbers and the ability to be able to buy something. I reach a point when we start reducing numbers that the cost of production of that goes up significantly to the point where not only -- I mean it becomes a self-fulfilling prophecy, if that makes sense. I can't buy these things because then they become more expensive so -- which -- which drives me to buy even fewer of them, which eventually causes me to cancel programs.

So I -- I am concerned about it. I'm -- I'm -- you know, when we -- when we managed the Budget Control Act last fall, last September, all the services took the \$487,000 -- excuse me - - \$487-billion bill that was passed to the Department of Defense, we've managed that. And to be honest with you, I'm very proud of my service and I'm proud of all the services. We worked ecumenically throughout all of that, and I think we've got a good plan with our budget. The looming thread of course is sequestration, and it's out there, and -- and I read the same newspapers you do. Some people say no way, some people say it could, and then every now and then, I'll get reminded by a member of Congress when it says General Amos, don't forget that it's law. It's not a matter of it might happen; it's law. So we'll have to see how it ends, so I'm concerned that it will have an effect on everything.

It will have -- I've only got four levers -- excuse me -- three levers that you can control in -- in a sequestration. One is manpower and the President has already said I'm going to take manpower. He made that decision about a month ago. He took manpower off the plate. The second lever is procurement, which is things, and the third lever is Operations and Maintenance, and that's money I send to S&T, that's professional military education, you want to go to the War College, you want to go to Command and Staff, it's ammunition, it's fuel for training in preparation for combat. It's all those kinds of things. It's the ability to be able to higher contractors to help me reset the Marine Corps force and the vehicles and all their equipment as it comes out of Afghanistan, so that's what O&M is. So I really only have two levers over there; one is procurement and one is O&M, and so if sequestration hits, I'm going to have to manage those levers to bring back the Marine Corps to adjust it for the new fiscal environment, so stay tuned. Does that answer your question? Okay.

MAN: Ladies and gentlemen, the Commandant of the Marine Corps, General Jim Amos. Thank you so much, sir. (Applause)

GENERAL JAMES AMOS: Thank you.

(END)