

Panel: Combat Support in the 21st Century

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General Stephen Lorenz**

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General Dunn: Welcome back. I'm going to dispense with long introductions because I think most everybody knows the two panel members we have today. We're blessed on this panel to have the Commander of the Air Force Materiel Command, General Don Hoffman; and the Commander of Air Education and Training Command, General Steve Lorenz. Gentlemen, welcome.

[Applause].

What I'd like to do is ask each of them to make a short statement, five or so minutes plus, then we'll start with questions and answers.

General Lorenz?

General Lorenz: Thank you, Mike. It's always a privilege to have one of my upper classmen here to introduce me. [Laughter].

First of all, it's indeed an honor, and I know Don feels the same way, for us to be here. To the Chief, thank you for letting us come.

I had thought about bringing a video and I had it prepared and they said no, Lorenz, you can either have Don Hoffman or a video, not both. So I got Don. [Laughter].

The second thing is, they prepared these remarks for me and the previous speaker, the Chief Master Sergeant of the Air Force, I got through all my notes, and he said that, and he said that and he said that, so I have nothing else to say. [Laughter].

Let's talk about your Air Education and Training Command. General Kehler did say that he had the best job in the Air Force. I do believe that every MAJCOM commander and our Chief believe that they have the best job. The thing that's best about being the Commander of Air Education and Training Command is that I get to hang out every day with America's best and brightest, right out of high school, right out of college as the join our great enlisted force and as they join our great officer corps.

And we're training civilians. We're having courses like at Air University called CALC where we're taking interns and bringing them in and giving them sort of like a mini OTS and indoctrinating them into the culture of our Air Force. So it's just a wonderful time.

It's an exciting time. I know there are challenges everywhere. I know we're at war and there are people that are sacrificing all over the world, but it's an exciting time to be, in my mind, to be in our Air Force and especially to be in AETC.

What are the things we're doing to support the joint force commander? Every presentation I give I look at the effect that we want to create as an Air Force. Our effect is to support the joint force commander. I end it there. And I believe in AETC it comes across two spectrums. There's really three, because there's recruiting, training and educating. In recruiting we're working to get the right type of people who are doing all the different jobs that are in our United States Air Force, and recruiting the right type of people who can go do demanding jobs that support the joint force commander. All over the world.

The second part of this is the training part. What I think of as a continuum of training. The recruiters recruit a person, they BMT which is Basic Military Training, which is now eight and a half weeks. It's got all this new expeditionary stuff in it. They go through that process, then they go to technical training. Air, space and cyberspace, all arenas. Each one of my commanders -- the recruiting service, the 2nd Air Force Commander, the 19th Air Force Commander, all of that. They take slices of it. So what we've done is we've decided to build continuum training because it doesn't matter whether a person is recruited if they don't get through Basic Military Training, if they don't get through technical training, if they don't arrive at Langley Air Force Base or with Donny Wurster in Air Force Special Operations Command. That's the effect that we want on the continuum of training.

The same thing goes with a continuum of education. Back in the late '40s when people like Muir S. Fairchild built Air University they stated, it's even written down, that the premier school of Air University, which was built on an Oxford model, is Air War College. And it is a great school. There are many people in this room who are graduates of that institution in officer education.

But there's a building block approach. So the issues it starts with, for the officer corps, Air and Space Basic

Course, which has been upgraded, and by this summer of '09 will have changed 65 percent so it keeps up to date with the Basic Military Training course on expeditionary training.

So what has happened is as you go through Air and Space Basic Course, to Squadron Officer School, to Air Command and Staff College, to SAS, to the War College, and then on, most people in this room, those who are the senior officers know this, that I've been and I know they've been to more schools, more joint schools, as a general officer, they're shorter in length but they're still as powerful and as effective, it's just amazing. So you have a continuum of education.

So we built a bunch of centers down in at Air University where the Commandant of Air War College is now responsible not just as the Commandant of the War College, but he's also leader of the Spot Center where he is responsible for integrating and synchronizing all joint Air Force education. It's a pretty exciting time because it's making a difference.

In the world of expeditionary, especially in AETC, we're working very closely. You see, our core competence is recruiting, training, educating, but also our core competency is we do that very very well, and it's a machine. But what we really need to be is, in everybody's mind, in my mind, is 1-800-AETC. If anyone has a training or education issue, whether it's in Afghanistan or in Columbia or in Antarctica, wherever it is. If they have an issue we should be able to be responsive in a very swift time, or as fast as we can, and build a training program. We don't need to own it. We don't need to control it. What we need to do is build a strategic vision, an umbrella, that it operates under. It's a pretty exciting time to do that.

For instance, the Air Advisor. So far we've had 416 graduates, and there are currently 162 of them in Afghanistan. It started basically from nothing.

Or how about this? The Chief and our leadership, we're going to, and General Corley in ACC, is going up to 50 orbits in the UASes. So we came up, there are challenges to feed that engine, to produce that number of students that will go on to do UASes both as sensor operators and as UAS operators. So what's exciting is today, the Chief at the last Corona decided we would take for the next three years 100 SUPT students and they would be pulled out of line, just like an assignment. They would come down to Randolph Air Force Base, we built this course,

the Chief just visited it, in 12 weeks, and give them a precursor of the training that they're going to get at Creech Air Force Base in ACC. So that program is going through. We've had about three classes go through that and they're headed straight to their UAS training at Creech.

We also have a beta test. This has been exciting. That is we picked two groups, the first one started in January, of ten officers. Then we'll have a second group which will be ten officers in June. They'll start this process. It lasts between seven and eight months. As they go, and we send them off to Pueblo, Colorado where we do the initial screening. They will solo out in a DA-20 with about 18 hours. Then they come to a precursor school, once again at Randolph Air Force Base, and they take that training. Then we're sending them off to Creech to get full up. Then we're doing a beta test on this and see how well it goes.

The initial indications, and we're just letting them -- Remember, all these people, especially the ones that are in the beta test, they're mostly captains, in fact I think all of them are captains, and they're all volunteers. They're all dedicated. They want to do this. They're excited about it. That's what makes all of us excited too.

So those are the type of things that we're doing.

Let's talk a little bit about recruiting here because this is important and then I'll get off the stage because it's an important time. You know in PBD-720, many in this room are noted experts on that subject, is that we went down from about 357 to, and the number is either 311 or 316, and we did it across the Air Force. So the truth has changed this time and the missions have changed, so we're going back up, the Chief has fought hard for this, to get us back up to a number -- but they're going to be in different areas. Well, the recruiters went down from 1400 recruiters to 1200. They've been legislated to go back, and authorized to go back up to 14 but it takes time to get there. Their job now in this year is to recruit 4,000 more people to get it back up. We're going from about 27.5 to 32, somewhere around in there, new airmen accessions. And guess what? Last year in '07 our recruiting service met all of its requirements by May. That's pretty good. This year we're on a similar track. A lot of good people, bright young shiny recruiters all over the country that are representing all of us out there, recruiting bright young shiny airmen that will join our Air Force to support the joint force commander.

As you can tell, I'm pretty excited about being in this command. The first command. It touches everybody's lives. It's touched most people's lives in this room.

So without a doubt I'll turn that over to a more exciting subject, logistics and acquisition -- [Laughter] -- because I know my stuff is pretty boring and mundane.

Don, if I can turn it over to you.

General Hoffman: Thanks Steve. And thanks, Mike, for this opportunity.

AETC certainly is the first command when it comes to people, but Air Force Materiel Command is the first and last command when it comes to stuff. Whether it's thinking forward in the science and technology area about what we might possibly do or want to do or be able to do, to acquiring it, to sustaining it, to testing it all along its life cycle. We're involved in all those things, but to get with the theme of today's panel on combat support, it implies a warfighter. Combat support to someone, and that certainly is the warfighter.

So let me tell you the two things I think about every day. The first is the nuclear enterprise. Although the model for SAC for a long, long time was "Peace is our profession", it was warfighters who made that peace possible. So this is a warfighting enterprise and we have to be ready to warfight on a moment's notice.

I have 15 centers or center equivalents in AFMC. You're familiar with most of them. The three product centers, the three depots, the two test centers. We do have one center dedicated just to the nuclear enterprise, the Nuclear Weapons Center out at Kirtland. AFRL. The Museum is in the nuclear enterprise because they preserve the history there. Every one of these centers is I the game, they're all in. They said well, maybe not AFSAC because that's where we sell to our foreign partners. But I said no, they are in because we do have dual capable aircraft in Europe, F-16s, that have a nuclear mission. So the command is all in.

So every day I think about that and I think about, are those people out there running the centers doing their job? Are they working the problem today? AFMC in the nuclear enterprise has just inherited a much larger role than we have in the past and we're about to inherit an even bigger role in that as we rearrange our focus on the nuclear enterprise. So I want to make sure every day I'm thinking

about that and everyone of those Center Commanders is out there thinking about that.

The second thing I think about every day is support to the engaged warfighters. You heard two of them yesterday, General North and General Wurster. They are in the arena. They are in the game right now. Not that the other joint combatant commands and the other component command are not important, and we certainly support them as well. But what I think about every day is what are we doing to support them. I'm getting into the agile sustainment, agile acquisition lane, and I'll be glad to answer questions you may have along those lines.

It's frustratingly challenging and disappointing sometimes in how responsive our system is to that. Sometimes a valid need is identified, but we go through this bureaucratic grind for months and months if not years to really decide whether that's really one we're going to change. I'll be glad to get into that more, but Ms. Payton who I've worked very closely with over the last three years has a saying -- Advantage Al-Qaida.

I don't think they have to go through a PPBS system to decide where to put their resources, they don't have to get legislative approval for what they do. They have a very streamlined process. Most of our adversaries have that asymmetrical advantage over us, and their ability to make a decision and implement change when they see a weakness in our system and they want to exploit it. So we need to work on that. I'd be glad to talk about that more.

That's the second thing I think about every day.

Part of it is the friction between effectiveness and efficiency, and you heard General Wurster talk about that. I think in the military arena effectiveness have to be your first thought when you decide how you're going to respond to a need. But over time if you don't consider efficiency, you won't be effective over time because you'll consume too many resources and all that. So if you're invading Normandy it's all about effectiveness, but if you're going to invade Normandy month after month, year after year, you better figure out how to do that efficiently as well. So the tension between those two is something that we wrestle with every day. If there's a no-kidding emergency need effectiveness I think wins out first, and then we'll get around to doing it.

The slow, deliberate process has a purpose, it serves a function, and I'll just give you one example. That's counter-IED. So if we think they're using transmitters to

trigger explosive devices there to attack our convoys, is there a jamming solution? Where we can create this jamming field around this convoy as it moves forward. Well, yes, we can and we do. But if we just do it in isolation, everybody starts turning on high powered jammers, we'd have spectrum fratricide, and you saw that this morning when the Chief was talking. We had fratricide there in the frequency spectrum.

So there is a reason for the deliberate process and how we accreditize systems and put them on-line, whether it's in the cyber domain, the space domain, and when we employ lethal means, we have a moral responsibility to make sure digits aren't being transposed as they move through systems there, and cowboy ops doesn't hack it when we sit there and just kind of create a new way so say working together, machine to machine, and we haven't really tested that. There's a big responsibility to make sure that the end result is the lethal application of power, that we do that right. So there's room for deliberate and slow and effective testing and that.

Sometimes you've got to go fast and take that risk as well. I'll be glad to talk about that more in the Q&A.

Those are the two things that I think about every day. Then there's the more routine business. Again, the title of the panel is in the 21st Century. I would say most of the stuff we're sustaining is from the other century. Nothing magic happened when we went through the millennium there, but some of the stuff we're sustaining is from the middle of the last century.

So my plea for proper balance in resource allocation, to recapitalize what we need to of the aging fleet there, is vitally important to our command.

With that I'll stop and take your questions.

General Dunn: Let me start the questions and piggyback, General Hoffman, on what you just said.

My intel says that you just got back from Afghanistan and Iraq. Can you give us your observations from that trip and how it applies to Air Force Materiel Command?

General Hoffman: You bet. First of all, thanks to Gary North for letting me traipse through his AOR there for a couple of days. We did have some weather impact there that we didn't get to every place we wanted to get to, but it was very informative for me and the small team that I took there with me.

For all those that travel there, the overwhelming impression is the dedication of the folks there, the jointness of the operation where you find yourself going from base to base and dining facility to dining facility. It's kind of a whirlwind flow when you go through there. But the 24 hour ops, the dedication of people I think was my first impression.

We did talk to individual folks and they expressed needs and concerns. Some of those we've chased real time. Some of them I took back to the command not to chase at the tactical level things we discovered there, but to use them as teaching points so that like me everybody thinks every day, what am I doing to solve the problem? So they create the culture within the command which is more of a rear based command. We do deploy folks forward, but most of my work force is civilian, they don't deploy forward in the same numbers. We have some. But I took some teaching points back to help create that culture of responsiveness for Air Force Materiel Command for the warfighter needs forward.

One other thing that I really got appreciation for there is I went into the cockpit of nearly every aircraft that was stationed at the bases I was there. I'm most familiar with the strike platforms, the bombers and the fighters, but for all the other wide-bodied aircraft that are operating there, whether it's a C-130, the EC-130, the KC-10, the C-17, the KC-135, one of the overwhelming impressions I got was MacGyver is alive and well. And in every one of those cockpits there's, after level off, somewhere on climb out, the laptops come out. They need situation awareness in the cockpit because we're operating differently there.

Traditionally these platforms all are outside in the permissive airspace, if you will, on the periphery of denied airspace. That's classically how we have most of our wartime engagements. So the penetrators go in, sometimes in packages and so forth, and the tankers and the wide-body ISR aircraft and the airlift is on the periphery, sometimes going in when the mission demanded it. But these people in Afghanistan especially, they're parked right on top of that airspace. They are in the airspace, because from an air perspective at the present time at least it is permissive in this environment. So we're getting some ideas here. There's probably some bad learning going on here, maybe more in Washington on what the real fight might be like when you have to fight your way in every day and regain that air superiority and it's not just there 24x7.

Anyway, these aircraft are all in there. It's a very congested battlespace, so they all have these laptops. On the low end it just shows them where they are over a moving map. A little notch up, they're actually getting data flows back and forth that can be retasked. But they're trying to navigate around with their round dials in their cockpits, and maybe with this laptop, and most of them are looking over their shoulder because it's the engineer, somebody who actually has the laptop, trying to position themselves in the three dimensional space around restricted operating zones because of unmanned vehicles, around refueling tracks, around kill boxes which are fluid, they're changing. So when there's a troops in contact, situation, all of a sudden kill boxes appear over that and fighters are converging on it or bombers, ISR platforms, UAVs. Very fluid.

So one overwhelming impression I got from the trip was we need to do more to put stuff in their cockpits, to give them situational awareness, and we need to figure out how to do it in a proper acquisition way, in a proper sustainment way. Right now they're hooking cables up and they're doing the best they can with ingenuity. We owe them better.

General Dunn: General Lorenz, to piggyback on the focus on the combat theaters, General North told us yesterday that he had large operations in Iraq and Afghanistan training the Iraqi Air Force and the Afghani Air Force. This seems to be a wave of the future.

Is AETC involved in that? Are you thinking anywhere in the future about some kind of permanent organization that looks at this problem in a larger sense?

General Lorenz: Right on. That's why I said earlier, 1-800-AETC.

Recently, in fact the Chief was there, the Minister of Defense of Iraq came for a visit to AETC. The Iraqi Air Force, and I'm using that as an example, is looking into buying some aircraft in the future.

We have been, we continue to do training starting with English level training to technical training to pilot training to education. We are totally involved in it.

There are some new things going on, like the air advisor, or it was Air Education and Training Command and Air Force Academy people who went over and set up their Air Force Academy. It's their school systems. They are imprinting off of us.

A similar thing is happening in Afghanistan. What we really want to do is get more involved in phase zero operations around the world. Not just be looking ahead to the future, we need to be more proactive in what we do and participation in the whole spectrum of phase zero operations.

General Dunn: To follow up on that, and this is a question I didn't get a chance to ask General Kehler when he was up here, but we've got a cyber warrior career field starting. What kind of training and education do you have in mind for building cyber warriors of the future?

General Lorenz: Another exciting dynamic area of the world. I like to say, next year, a lot of people don't know this, but next year is the 100th Anniversary, 2010, of military aviation. At Fort Sam Houston on the parade field there, a Lieutenant Benny Falloy flew the first military airplane. By the way, they actually have films of that flight.

Today in cyberspace, and especially when building cyber warriors, a lot of people have been working this arena for a long period of time, NSA, all different areas, but we're really in my mind learning how to turn the airplane by warping the wings. We're trying to build cyber warriors.

So we've gone out with Major General Lord and we've asked him, and the people, what type of person does that cyber operator, cyber warrior look like? We've done things like built a master's program at AFIT for cyberspace. Down at several of our tech training centers like Kieseler or in the intel world at Goodfellow, we have upgraded the training and education of all the people in cyberspace.

At Air University across the spectrum of the curriculum we've added into the curriculum knowledge of cyber warriors.

Here's another thing. In this room people are mostly, not all, but mostly baby boomers. And so the issue is I'm a digital immigrant and not a digital native and I am totally inept. In fact I like to tell the story that in my first wing, this was in the early days and I have moved on. I used to have them print out my e-mails. I would write the answers down on paper and then have my staff type up the e-mails and send them out. That's how bad I was.

But if you're dealing with baby boomers, generation Xers and millennials, each one of them have different

experiences and different knowledge on the subject. So we have to build our training and education program to meet all three. In fact we have courses at all levels in our training system, in our education system.

We have a Senior Joint Information War Course for one and two stars and civilian equivalents, and that's been around for about ten years. With permission of the Chief we're doing a beta test for a course that's going to be in April for three and four star and civilian equivalents and we're going to have people like General Hayden is going to be the senior mentor. It's exciting.

So we're moving forward, and we know we don't have it a hundred percent correct, but we're moving and we're trying to make it the best. We need to get out in front and not behind. We're trying to catch up.

General Dunn: General Hoffman, I've got about 20 of these little blue cards on something entitled the acquisition system. This is probably not a question for you, but maybe a better one for the Chief or the Secretary, but it ranges from how do we rid ourselves of the protest environment we have, when are we going to begin the KCX competition, what's ahead for the CSARX, et cetera, etcetera. Can you comment on any of these broader issues? And General Lorenz, you ought to be happy you're not having this problem.

General Hoffman: General Lorenz wants some acquisition programs, too. He wants to replace the T-38, the T-1's going to age out here and it's going to catch us by surprise and so forth.

I would say there is so much acquisition reform wisdom in the U.S., I just don't know. We've reformed it so many times. I don't know how we can be anything but perfect now. [Laughter]. And more is coming. I find that most of the wisdom is gained after people have left government service. [Laughter]. Maybe I'll be there, too. I don't know.

For those that are in the arena, and by in the arena I mean the program offices, I mean the people working the source selections, I mean the people doing battle in the Pentagon there going to meeting after meeting after meeting trying to build the support for a program to move forward to answer a thousand questions every day on every program, and then to try to explain it all again after you get through the OSD level of oversight which is the rightful role for them, to get into the congressional level and so forth. It's a big enterprise.

As a nation you've got to view progress in all of these areas, you've got to view in more of a long term. If you're looking for a one week or a one month view of progress or here's a new policy, a new OSD real set or a new congressional real set, and boy, we fixed it now, you'll be disappointed every stop. It takes a long time to effect change, it takes a long time to actually move a program through the deliberate process. I think it's deliberate probably by design a little bit there, so we don't follow every leadership cycle and chase this and chase this and so forth. We still see some of that, but it's a more enduring process to actually deliver weapon capability. But as a nation we do it. We have pretty good stuff out there. We'd like more, we'd like it replaced and so forth. But for the process itself, there's more wisdom than I can ever hope to get has been applied to the problem, whether it's a DAPA study or any of the other studies.

And we come back to some fundamental issues of how we organize ourselves as a democracy and how we allocate priorities and resources and how those are I guess argued and championed and winners and losers and all that through that process. So it's a fundamental larger process. We tend to focus on the little "a" which we call the actual people that do the acquisition as opposed to the big "A" which is the requirements and the resourcing. As General Corley and I often say, he's taught me this. It all starts with strategy but it all ends up with resources. That's the fundamental tension, I think, we have in our system here.

So it's really not little "a" acquisition, it's DoD procurement. Or larger than that, it's federal procurement. So look at things like the Big Dig in Boston or the Congressional Visitor Center. And if you want to examine cost overruns and schedule delays, there is the mixing bowl in Springfield. There are plenty of examples out there that probably indicate that maybe this is just the slop that goes with a democratic process in some respects.

Having said that, within little "a" there's a lot of work we can do and we are working mightily to address those things. I would say probably the biggest thing that we can actually reach out and touch is the acquisition work force. We over a period of a decade at least have allowed our organic ability to judge vendors, to grade their homework, if you will. We have allowed that to erode. Whether it's in systems engineering, whether it's in contract officers, whether it's price analysts, we have lost our organic

ability. And some of that was mandated to us. Get this much smaller. We have, and then we end up buying contractors back to augment our staffs.

So I'm in a full court press right now to address the thing that's most under my control, and that is to fill every civilian vacancy that we have within AFMC.

Last year we under executed about 2,000 work years. My gap this year is to close that gap to zero. 1865. But on top of that we have the Section 852 monies that have been allocated that say you can buy more. Plus on top of that we have other contractor to civilian conversions coming and so forth.

So until we have an efficient way of hiring civilians, what I'm talking about now, we're just treading water. And here's the challenge. If you think of the civilian rank structure as a pyramid, just like the military pyramid, and somebody leaves up here towards the top, let's say a GS-15 pay band three level, the system will have you replace that individual with someone from the next band down. That takes anywhere from a third of a year to half a year. Then you've got a vacancy there that you replace with the next echelon down, and so forth and so on. So by the time you actually get a new paddler in the canoe, as I talk about it, it may be years.

I don't want to tell the civilian work force that we're going to bring in just outside hired help, but I want to take that pyramid and take a slice along the side of the pyramid, and instead of all new workers coming in from the bottom as we do in the uniform construct, I need to bring in talent across horizontally in at whatever grade. I want to pick the best athlete for the job. If it's somebody who's one notch below, that's fine. But it may be somebody from another service, it may be somebody from another government agency. They may have the talent we need that can come in at that GS-11, GS-13, pay band three level. So I can't sit there and take this cascading series of delays to actually get another person. So net gain is the metric I most track.

When we look at civilian hiring we pat ourselves on the back that we're now filling that cycle of a vacancy to a fill. It's gone from this many days to this many days and it's going down, we all feel good about that. But if all we did was move somebody from one canoe to another and I don't have any more paddlers, that hasn't helped the enterprise. So my number one metric that I'm tracking is net gains over a period of months or years. I've got to

get more people in the enterprise, not just changing chairs.

General Dunn: To lean on you a bit, I didn't hear the word KCX program, and when is it going to start, and CSARX update, if you would care --

General Hoffman: That's Pentagon talk and I'm the organize, train and equip force. There are dynamics going on inside the Beltway right now that it's not my purview to discuss. There's plenty of attention being focused there. So the answers will come in due course.

General Dunn: A deft answer.

General Lorenz, I've got a number of questions up here about the importance of an advanced degree for officers, to why can't we look at enlisted operators of UAVs, to have we considered joint training for UAVs with the Army and other services are going to be operating our UAVs.

General Lorenz: Yes, yes, yes. [Laughter].

General Dunn: More, please.

General Lorenz: You asked three separate --

General Dunn: I did. I didn't want General Hoffman to hog the stage.

General Lorenz: Okay. The advanced degrees for officers. Masking/unmasking, a very emotional on again/off again decision. I've literally been in Corona meetings first as the AE commander and now as the AETC commander discussing that. I think the Chief is going to chair a meeting in the future in which we'll discuss that.

I believe, let me use this example. Two things. My father was commissioned in 1950. He went to St. Louis University, was a direct commission. He went to Ellington Air Force Base, which has long since closed, but that's where I was born. And in his squadron of 100 officers, four of them had college degrees. Four out of 100. That's what it was back then.

Remember the Aviation Cadet Program. There might be some people here who are graduates of the Aviation Cadet Program.

As time has gone on the level of degrees in the nation and in the military has grown and there is expectations on your level of education.

Chief Airy, the first Chief Master Sergeant of the Air Force came to me one day and we were talking, when I was the commander of AU, and he says, Lorenz, you know the enlisted people of today are the officers of yesterday. I thought about that and reflected, and I thought, you know, he's right.

If we take just the master's program for officers as one part of the pixel, that's fine, but how about if we look at it in the continuum of education for officers and enlisted.

In 1972 our forefathers and mothers came up with a great, the Community College of the Air Force, and it formed an associate degree. We are the largest community college in the world. We graduate almost 18,000 people a year. By far. Way out in front of everybody else.

In the Air Force we take education very very seriously. Recently in '07 there was an article in the Air Force Times, and I don't mean to quote one paper over another, but very few people write about education in the military, but they did and they wrote an article and said okay, in '07 according to their data the military at all levels, from high school, associate, college, master's, PhDs, granted 39,000 degrees across all the joint arena. The United States Air Force granted 26 of those 39,000 degrees. Twenty-six out of 39,000. We in the Air Force, based on our history, take education very very seriously. It's one of our -- and all the other services do too. And it's all towards that common goal of supporting the joint force commander, but we do it very very well.

The master's program for officers. I believe that a certain time, and I'm giving you my personal opinion. I believe at a certain time in an Air Force officer's career you need a master's degree. I don't believe that is the same for every officer at the same time. I believe that if you're an engineer or an acquisition person, if they get sent to AFUT say as a captain, that is almost like upgrading to instructor in another set of career fields like space or missiles. But I believe sometime in the majors career field, and I know everyone has different opinions on this subject, that there is a time and a place for an officer to get a degree. Just like I believe for enlisted personnel that a Community College of the Air Force degree is great, but as we move into the 21st Century, how many of our enlisted people need bachelor's degrees? I don't know. Do you know that 5.6 percent of the enlisted force have a bachelor's degree, and they're mostly in the senior ranks. What if we say that over time certain career

fields need to have a bachelor's degree and we raise it to 15 percent? That's a 200 percent increase. I have no idea. But I do know we need to have a strategic vision and an umbrella under which it fits, and it fits towards the goals and needs of the Air Force, so we'll do that.

The other question was about joint training of UASes?

General Dunn: Joint training of UASes and enlisted operators.

General Lorenz: Enlisted operators. Out at Goodfellow Air Force Base, which is primarily our intel and firefighter school, we have built a course at the request of General Corley and ACC to accelerate the process of building different types of enlisted operators.

All enlisted operators are not created equal. They come at it with different levels of experience -- Guard, Reserve, active duty and the total force. So we built a tiered approach to teach enlisted operators so they can get to the warfighter as fast as possible.

General Dunn: Enlisted UAS.

General Lorenz: Yes, that's what I'm talking about. Sorry, I misspoke there because that's the course there for UAS operators.

Then on the joint side, we're on a journey with the beta test to find out exactly what is required to be a UAS operator and also we're looking into what the other services are doing and how they're doing because we like to benchmark off what's the best of breed in everything that we do.

One thing I've learned over the years is we do not have, I have a heck of a lot more questions than I have answers. So we're out there in discovery trying to figure that out.

General Dunn: Your comments on the degree of some of our great enlisted warriors is interesting to me. Just for the audience, I sat on a Chief Master Sergeant Board and we had one career field where in a group of 25 eligibles for promotion to Chief we had 3 PhDs in that one group. So it's quite competitive, obviously, in different areas based on where you are.

General Hoffman, can you talk a little bit about the aging fleet? You see probably more of it than almost anybody else out there with the depots and all the

different issues you've got. Are there systems that you're having primary concerns over? How is your work force handling some of these tough issues where airplanes break in unpredictable ways?

General Hoffman: I would urge anyone who has not been to a depot and seen an airplane all torn apart and what they're actually taking off and putting back in to try to do that. It's really an educational experience.

I had a change of command I presided over down at Tinker here earlier in January and it was on the same day that the Question Mark flew that General Lichte talked about, the 80th Anniversary, and the change of command was on the depot floor there, and flanked on either side were two KC-135s. I made the same point that General Lichte made, that the Question Mark would be on our active flying ramp out there when these airplanes potentially come out of the inventory.

But the work force that takes those apart and puts them back together is amazingly good. You know about the tanker and going through the cycle there. Every time we open it up there's discovery learning, there's more and more work to be done, the same on the C-130 fleet when we open them up. On the fighters, cracks in A-10 wings, bulkheads in F-16s, longerons in F-15s. We don't have the geriatric modeling processes that tell us what the next one's going to be. We can take our planes and destructively load them and analyze them and find out what part breaks, and there's a lot of great engineering modeling out there, but we will probably be surprised again in the future by some failure modes that we don't understand.

I think of all three of the depots as geriatric hospitals now, and even though the staff at the hospitals is getting better and better and better, they're turning things faster, actually, even though the aircraft are aging. The patients are coming in sicker and sicker every time.

The average age of the Air Force writ large is over 24 years of age. It's the highest it's ever been. Can we keep fixing them? Yes. At what cost? That's an unknown. Are they still, even though we can keep them flying, especially the wide bodies, they will fly for decades from a flight safety standpoint, but are they mission relevant for decades? That's a different discussion. We can keep fixing them. I'm not sure what cost the taxpayer is willing to bear on keeping them flying. But we will not deliver an unsafe aircraft back to the warfighter.

General Lorenz: Can I jump in on this subject? I would like to do something and sing the praises of the men and women of Air Force Materiel Command. When I took over AETC from General Looney, General Looney, about a year ago we had an accident in a T-38C in which two of our great pilots died. So there was a part of an aileron that broke. They had grounded the fleet and fixed them all, but they were old parts.

General Carlson, General Hoffman's predecessor, decided to form a team, got independent engineers. They said there's a small probability, but they might break again. So the team of AFMC got all of the centers and other people and built 1500 sets of these parts in about 90 days and we retrofitted the entire fleet.

Not just to stand on the laurels there, they tore down 32 T-38Cs and found 156 single points of failure, and then they found where they needed to put their work effort for the next few years on the T-38.

I went out to visit Hill Air Force Base, one of the logistics centers, to personally thank the people who made such a difference to keep our planes flying.

In my mind, I have this picture, you know that ad that, whatever company it is ad where it show this one guy, and there are hundreds of people backing up that the phone will work. That's how I picture when an operator goes out to their aircraft, their space, whatever it is, there are hundreds of people standing behind it that says it will work to the best of our ability.

So I want to thank General Hoffman and all the people of AFMC for doing a great job.

One more thing, I just got handed a card, it says, "General Lorenz, clarification. Training at Goodfellow is for UAS senior sensor operators," so I wanted to make sure I clarified that.

General Dunn: General Lorenz, to follow up, in today's world we're seeing distance learning taking larger place, virtual type of education. What's AETC doing to adapt to these kind of changes?

General Lorenz: It's real exciting. This is another area that's a growth industry. When I went to the AOR, I'll never forget, people working very hard, they'd go 12 on, 12 off, 3 meals a day, work out, it depends on their jobs of course. Then they have time on their hands. I was

looking at people and they all had their laptops open, all over, they had their laptops. We ought to get in that business. Other schools got in the business. So we came up with the Air Command and Staff College Distance Learning Master's Program. We started it two and a half years ago, and we thought maybe 200 to 500 people would sign up. Right now 1,000 people are enrolled in the course, and in two and a half years it's an accredited master's. You get IDE credit, ACSC credit and a master's degree all in one, and you can do it in about 18 months to 2 years. Already about 100 people have already graduated in just two and a half years since it started.

I picture in the future, you know you go into Springfield which is an F-16 Guard unit just this week, and they have a really neat simulator for F-16s. You can pick it, there are simulators everywhere.

I picture the future of training and education like Star Trek, and going into a halladeck. I really believe that. It sounds far off, it sound out of sight, but the issue is simulators and distance learning and all that are the wave of the future. We started like an education, we had a culture of simulators. We can fly airplanes and we can make emergencies, and you flip the switch and set this goes wrong or the weather gets bad, and you can do that all computerized. Why can't you have a simulator where you can sit there and talk to someone and have a conversation, and then a machine talks back to you and you make decisions and then it takes you down a road. You might make wrong decisions and then it shows you the consequences of the decision you made.

The Army's doing that in a lot of cases. We need to do more of that. So we're really working distance learning very very hard to get out there in the front.

General Dunn: The last question, and I apologize, I've run over a little bit, but General Hoffman, what technologies do you see out there that excite you that offer the most promise? And likewise, what are we doing to avoid technological surprise on the other side of the equation?

General Hoffman: That's a tough one to answer about how do we avoid. I think we need to stay connected with our intelligence looks forward to see what threats are emerging out there. Can there be a surprise? Will there be surprises? I don't know the answer to that. I think there certainly could be, and hopefully we'll stay far enough ahead in our anticipation to do that.

In the Air Force research laboratory there, they take their \$1.5 billion a year, and then there's other people's money that comes in with a focused task attached to it that's about another \$1.5 billion dollars. With that they come up with their plan, where they're going to focus their energy and their talent pool and their resources and there's a spectrum. Some things are very clearly targeted toward a warfighter need and we think there's a solution that we can close that gap faster with the right investment and stimulate the right either in-house work or contractual work to close that gap and deliver something to the warfighter.

Some of their plan is just far out crazy thinking stuff. People said this will never bear fruit. But in that arena of technology investment you have to plant a lot of seeds, nurture a lot of plants, you have to thin the carrot row, and then you've got to thin it again. Not everything's going to end up on the dinner table from that vegetable garden. And you don't know until you plant it and see how it survives in the conditions you have.

So there's stuff out there that they do that is probing and if we have 100 percent success and we don't have any failures then we haven't probed hard enough.

So a combination of that with what industry does with their independent research and development and so forth is I think what the nation needs to do as an investment strategy to keep probing the edges of the doability there, be accepting of failures and dead ends and blind alleys. Otherwise we will be surprised.

General Dunn: The time is up and I apologize for those of you that asked questions that I didn't get to, but on behalf of all of us at AFA thank you both for your leadership and your dedication. We feel a lot better with great folks like you serving our country. Thank you very much.

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