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DWG: Let me welcome everyone to this Defense Writers Group conversation, a virtual conversation with General Murray of Army Futures Command and Dr. Jette, Assistant Secretary of the Army for Acquisition, Logistics and Technology. Thank you so much, gentlemen, for making some time available for the journalists of this organization today.

We thought it would be interesting and produce an interesting conversation and perhaps a productive one for all concerned if you were both our guests today because we know that your work overlaps and intersects and so forth in quite a number of ways.

So I'm going to be the moderator. I'm basically going to go down the list of people who have accepted the invitation to join this call and in the order in which they accepted I will ask them if they have a question. But I'll start by asking a question myself to get the ball rolling.

This is a question for both of you and perhaps both want to comment on this one at least, and perhaps along the way other people may just say they want to ask a particular person but that doesn't mean the other one can't also speak, but whoever's been asked should answer first.

My question I guess to get the ball rolling is to ask you gentlemen to talk a little bit, maybe pick one, two or three items that fit this description. Things that you're working on that we might not know that much about yet but that may change

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the way the Army fights in the future. There are some things we know about. Maybe there are some things we know about but you feel the public doesn't understand the importance of.

Talk to us about, in other words, the kinds of things that you're working on that you think may change the way the Army fights in the future in interesting ways.

Gen. Murray: Those are really tough questions. I'm going to let Dr. Jette go first.

Dr. Jette: I was going to try that myself.

There are some things that I will tell you, just to make people that might be listening that are not particularly thrilled with the United States on a day to day basis, a little bit uneasy. There are a number of things that I say that we are working on that you're not familiar with that are doing really well and not, they're over in the "we don't talk about them in detail much" category.

I would say one of the things that would be kind of an important factor to look at is that we are looking at the potential integration of all of our fires into a fire network. This ties into something I think General Murray may raise as well under convergence.

But the idea is I've got an Integrated Battle Command System which is for my Air and Missile Defense System. It knows from all the different sensors which shooters to have engage the target. At the same time we have ATADS which controls our indirect fires. So if I can bring the two of them together then I've got some sensors that are actually supportive of indirect fires such as being able to see inbound indirect fire -- rockets, artillery and mortar -- using the Q53 radar as an example which actually works off the ATADS side. And instead, have that trigger some of the new systems we're looking at putting into the air defense side of things. Because we are

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working hard at trying to make sure that indirect fire becomes less and less relevant and I'll kind of leave it at that.

That's the type of thinking we're doing is this integration of overall systems in support of each other. How does my sensor on my platform, I may take my sensor, see another target, you take your sensor, see the same target, and if I know where I am exactly and I know where you are exactly, then I can discern those two targets and by sharing information between those two platforms I can get my range to the target without having delays or do anything else, and I can do that concurrently amongst multiple targets concurrently.

So we've moving past just simply concepts of sensors and shooters into how do we get multiple sensors and shooters to be able to be integrated in capability such that we get more out of them than simply an individual item could provide.

I don't know if that kind of scratches your itch, but those are kind of some of the things that you might want to think about.

DWG: Let me not ask a follow-up so as to give more time for others and ask Scott of Federal News, do you want to ask?

Gen. Murray: Do you want me to take that on too?

DWG: Oh yes, please, General. Please if you have additional thoughts.

Gen. Murray: Dr. Jette laid out the, and this is something I think I talk to a lot of you all the time, so that's what kind of threw me, stuff that I don't really talk about. But Bruce worked through the ultimate end state of what we're working toward and I think most of you are tracking the work we did in Europe before Defender 20 was scaled back in terms of the sensor/shooter work. Sensors that we have not used in the past relaying information directly back to a fire unit with the intent of shortening the fire exchange, the amount of time it

takes to get rounds on the target.

But a couple of things that I don't normally talk about is Team Ignite is the intersection between concepts and technology. It has occurred to me for a long time that when we prepare concepts about how we will fight in the future they're usually not informed by scientists and what is potentially out there in terms of technology. And when we invest in technologies, rarely do we consult the concept writers to understand what type of technology will fundamentally change the way we fight in the future. So we stood up this thing called Team Ignite. It's ad hoc right now. We're working to formalize it in terms of bringing those two communities together so that a concept writer saying if only I could, this would fundamentally change the way we'd fight and the scientist or technologist saying well, actually we can in another 10 or 15 years. And vice versa. Really using that to drive where we're investing our science and technology dollars so in 10 or 15 years we actually can fundamentally change the way we're going to fight.

Another thing I don't normally talk about, I talk a lot about artificial intelligence, but a key component of the Army moving more and more into the area of artificial intelligence is the talent that we're going to need in the formations to do that.

We just recently got approved, we'll start a master's program at CMU this fall. It will start a program to bring young officers, non-commissioned officers and warrant officers in for a one-year immersion into data science that's about a four or five month course of the actual learning and then working with the Artificial Intelligence Task Force for five or six months. Then we'll send them back out to the force.

I also recently just got approval to stand up what I'll call a software factory which is designed to find the talent that I am convinced we have inside the force. They're just not coded that way. And give them some basic coding skills and then get them back out in the force. And we're going to need a lot of these

types of people. This is just beginning to seed the Army with the types of talent we're going to need in the future if we're going to take advantage of data, if we're going to take advantage of artificial intelligence in the future.

DWG: Excellent.

Scott, of Federal News Radio.

DWG: I guess first I'll address the elephant in the room which is COVID-19. I'm just wondering at this point where is the Army when it comes to acquisition with COVID-19? And I mean that in the sense of three main things really, which is where are you at with supply chain? You're trying to reach out to small and non-traditional businesses. This certainly makes that harder when you're not meeting them face to face, so how are you doing that? And then thirdly, what kind of response are you having specifically? You know, is Futures Command doing anything like, you know, in response to Coronavirus and things like that.

Dr. Jette: Let me provide the programmatic part of things. Clearly, COVID-19 has caused us to have to make a number of adjustments to how we do business, but I have to tell you a couple of things. One thing is that industry has made a significant adjustment in order to try and make sure that they continue producing on time and on schedule. They haven't hit the target on 100 percent of the cases, but in general with all of our programs we only have one program where we know we're going to have to actually make a significant change and that's an ACAT 3 program, it's one of our smaller programs. And because it's smaller it also is tied to a small company. The greatest sensitivities tend to be down in those programs which have connectivity to small companies as their major source of technology, delivery, services, et cetera, because if one person gets sick in the company you often end up with the entire company being in quarantine for 14 days. Then if they do it again, it gets worse.

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So with only one program having a major slip and that being a small one, I think that's a pretty good success and tells you a little bit about how hard industry is working to try and stay on track.

On the larger programs, ACAT 1's and ACAT 2's in particular, and I think General Murray will probably support this, we remain on track for first unit equipped for all the programs. That doesn't mean that some of the programs aren't having adjustments to delivery schedules or adjustments to the milestone. We're making adjustments as necessary and then working with the companies to try and catch up.

The larger primes have been very good at accommodating the challenges they have to deal with with COVID-19. In one case Boeing shut down for a week because someone came out positive on the assembly line so they just shut down and they did a thorough cleaning of the entire line, they reevaluated their methodologies and they implemented those things and they came right back at the end of that and they're continuing on.

BAE had a similar event. An individual knowing he was sick came into work and even the union got involved and said this is not right. You shouldn't be doing that and putting at risk all these other workers, and BAE has implemented in cooperation and support of the union, a system to make sure people have stayed at work. And I think the other day I was counting up, it was 45 days since anybody was positive at BAE. They keep pretty careful count.

The last thing I'll say is industry has been amazingly cooperative. Now contractually, they don't have to tell us a lot about their subs. In fact in some cases they don't have to tell us anything about their subs or their sub-subs. But I have a 60-page report that gets updated on a daily basis of the status of the subs to the various major programs. And that only can happen because of the cooperation of industry.

If there's a problem with one of the subs, and again this goes back to these challenges of small companies having infections or something like that. If there's something I need to get involved, in the middle of, if industry is not resolving the problem themselves, then it comes into my office and I'm on the phone with the CEO of the corporation and offering what assistance I can. And I do talk to them on a regular basis to try and provide any support.

So that's kind of the programmatic of where we are. General Murray might have some other discussion points.

Gen. Murray: Just really quickly, and Dr. Jette's exactly right. He and the entire team have done a phenomenal job of keeping industry, and he's got the unenviable job of looking after about 690 programs, and I've got the enviable job of kind of looking after a smaller subset of that called the 31+3 which match the Army's modernization priorities. I also have talked to all the CEOs, from anybody involved in the 31+3.

From a small business perspective, and Dr. Jette kind of touched on this, is we didn't have an incredibly good understanding, in the major defense primes it applies as well. We get a much better understanding of the subs and the subs of the subs in big business than the major defense primes. We had almost zero knowledge of all the small businesses that are working with us. So it's been a two or three work week effort with Major General Pat [Bird] who works for me who's an acquisition professional, working with ASAW, working with the Small Business Office, and I think just like he was talking about, we have a much, much better understanding of the small businesses that are critical to the 31+3 and in some cases even beyond the 31+3.

And then from keeping things on track, and IBCS is, the Integrated Battle Command System is one of the things we had to slip a little bit to the right. The first unit equipped, the date we promised soldiers they'd have that capability has not slipped but we'll adjust within the schedule. So we just added

more checks to this event coming up.

I just took a brief yesterday, and one of the things we talk about is the required testing, the required PPE, the protective equipment, and it becomes a go/no-go checklist. So we're working through how many masks we need. We're working through how much hand sanitizer we need. We're working through the amount of test kits and who's actually going to administer the test and where that test will go to get read. So it just becomes another checklist that we, another item on the checklist we work through to make sure that we're in a position to execute, and not only execute but execute safely when we do this.

DWG: I'm going to keep moving down the list. Ashleigh [Roche] of Jane's, do you have a question?

DWG: Yes. Thank you very much for doing this.

I had a follow-up for that question and then another question. For the follow-up, you mentioned IBCS, General Murray. How about IM-SHORAD, has there been a decision on that and how to proceed with ending of the testing and then looking at some of the key dates coming up?

Gen. Murray: Ashleigh, we did submit about a total of, and don't quote me on this. I can get you the exact number. I think we slipped a few months to the right based upon some software issues. As a matter of fact I was just talking to the CEO today on the software issues and we're jumping on that. We got an update yesterday and we're making great progress. But we did slide that a little bit to the right.

DWG: Thank you very much.

Then also, I wanted to ask you about Stryker. Since the Army's decided to sort of push up the initial fielding date for OMSB. Has there been -- not Stryker, sorry. Bradley. Has there been

a decision on what to do with the Bradley? Possibly an AROC and a decision point?

Gen. Murray: There has been discussion on what to do with the Bradley in terms of the, as you know, the newest version is the A4 that unfortunately you'll see when the budget hits the Hill, but that's all pre-decisional at this point so I really can't tell you what that decision was.

DWG: Patrick Tucker of Defense One. Do you have a question?

DWG: Thanks for doing this. I want to go back real quick to the integrated fires capability you said you were working on, and sort of a two-part question there actually.

First, is the Coronavirus pandemic at all affecting your testing schedule for long-range fires or your precision fires program at all? I know the testing is kind of tricky.

And relatedly, the integrated fires capability that you're working on, how do you want to test that with ABMS? The point of the Air Force ABMS thing is to kind of do stuff like that, so I'm trying to see how you guys figure out whether or not you're running something redundant to the Air Force or how you make sure that your integrated fires integrates with what the Air Force is working on. Thanks.

Gen. Murray: On the long-range precision fires portfolio, you're probably tracking. We had the third test flight of PRSM. I think it was the end of April if I remember right. Completely successful. So that is on track. Extended Range Cannon Artillery, we had to send one of the prototypes back to Picatinny for some work. Data [inaudible] AFC is located at Picatinny, sitting on the New Jersey/New York border that was probably hardest hit by COVID, so a little bit of delay there, but that program's on track. So no impact, bottom line, to the long-range precision fires portfolio.

ABMS, we have been in discussion with the Air Force for the better part of a year on how we integrate with the effort they have going on. And I don't think there's redundancies right now. I mean we're going to continue those discussions. I actually was out at Nellis I think the last time they had a live meeting on JADC2 driven by ABMS with General Mobile Holmes, the Commander of ACC. And General Goldfein did not attend that one, but everybody below him. All the architects of ABMS.

We continue those discussions, and we absolutely realize what's most -- when you talk about everything we kind of talked about. We talked about being enabled by machine learning and eventually artificial intelligence. It all comes down to data and it all comes down to the architectures you build and what Bruce talked about. It's not a specific sensor to a specific shooter. That's just too narrowly thinking. On a future battlefield I clearly see that just about everything is going to be a sensor. So how do you store that data and then how do you enable the smart distribution of that data to the right shooter? Because we can't build architectures that are relying upon huge pipes and just massive bandwidth to make it work.

So I believe ABMS and what we're working with with the sensor and shooter [world] are very, very complementary in terms of how we work with the Air Force and the Navy and the Marine Corps, that they can take sensing data off a ground sensor and we can pull sensing data off of, just where that data, where that sensor actually resides should make no difference to the services, and then how we decide to deliver effects to that target.

DWG: Just to clarify, the upcoming September ABMS experiment, you're not going to be testing long range fires as part of that experiment, is that right?

Gen. Murray: Right now I'm not sure what the Army participation in the September exercise the Air Force is running. I think they're still working that. AFC, and we're going to run

something separately which I think was stated up front in September, end of August beginning of September. Right now the plan is we're going to work with the Air Force and try to bring them closer together in '21. But in '20, parallel, not interconnected, and we'll continue -- our desire is to bring them closer and closer together beginning in '21.

DWG: Thank you.

DWG: Jennifer, Army Magazine. Do you have a question?

DWG: No question for me, thank you.

DWG: Sandra Irwin of Space News?

DWG: Good afternoon. Thank you so much.

General Murray, I wanted to ask you about the use of commercial satellite broadband in the Army. We just heard yesterday about an agreement that the Combat Capabilities Development Command signed to test the SpaceX Starlink service, and I understand that there are signed agreements with other providers. My question is, what concerns do you have as the Army begins to assess these services as to whether you have the necessary equipment, the terminals, ground equipment, and potentially security concerns. What are some of those issues that you are going to try to address? Thank you very much.

Gen. Murray: Much like we're doing with everything else. Yes, we're interested in commercial broadband and we're really interested in what most people anticipate will be an explosion of commercial capability in space. Primarily in low earth orbit. That's what we're looking at right now with the ones you mentioned.

There are concerns from an availability standpoint, reliability standpoint, a security standpoint, and really a vulnerability of the assets in a low earth orbiting altitude. The ground

terminal equipment, I think we'll figure it out but this is, and you've heard the Chief of Staff talk about this concept of buy, try and decide before we lock ourselves into a multi-billion dollar acquisition program.

I would view this as exploratory. Figuring out what capabilities they can provide, what the vulnerabilities are, what is the reliability, what is the ground equipment that we're going to need to move into the future. And I do think we will move that way just based upon the capabilities that will provide from a commercial standpoint, but I would be lying to you if I said there were absolutely zero concerns.

This is something we're going to be exploring and we've already begun exploring in terms of some of the low earth orbiters in terms of some of the [inaudible], not necessarily from a communications standpoint but from an imaging standpoint as we've done some experiments in the past.

DWG: And just a quick follow-up. I know the Air Force now is doing a joint procurement for their satellite communications equipment for the ground for the Air Force and the Army. Is that something that you think will be helpful to try to do more joint procurement with the Air Force?

Gen. Murray: I'll let Dr. Jette talk a little bit about this. There are pluses and minuses to joint programs. I think there are a lot of pluses to it but there are some things we're going to have to keep our eyes on in terms of joint programs, in terms of what drives the actual requirements.

Dr. Jette: Cooperative buys are not the same thing as a joint program. In a joint program we have to fill both requirements concurrently. Much to General Murray's point, that can get really complicated. So the interesting thing I see is less of a specific joint requirement being put in place than a cooperative effort going together and being fully informed on both sides. And we have a number of them that we're doing.

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The hypersonic missile is not a joint program, it's a cooperative program between the Army and the Navy, for example.

I don't know if that answers your question?

DWG: I understand. Thank you very much.

DWG: Yasmine of National Defense Magazine.

DWG: Thank you.

As a follow-up, Dr. Jette, earlier you mentioned during your COVID remarks that there was one program that you might have to readjust, a smaller program with a smaller contractor. Which program are you referring to with that one?

Dr. Jette: I'm going to have to get it to you. I just didn't memorize all of them.

General Murray said I have 680 programs or something. I just can't memorize them all. We'll get it to you.

DWG: Okay. And then my other question, at the height of the pandemic how many companies that work on Army programs had to shut down, and how many of them at this point have reopened?

Dr. Jette: How many companies have shut down?

DWG: Yeah, temporarily shut their lines down because of COVID?

Dr. Jette: I'm a little bit in the same boat as General Murray when you ask a question like that and I go okay. If I say five then it better be five. I don't remember the exact number that we've counted. It's not large.

For the primes, for example, I can only think of Boeing had the one week down and then BAE -- Boeing and BAE had basically a

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week down which they actually swapped with the week that they took off in the summer, so they really didn't lose that week. It just got realigned.

None of the other primes on the parts that work for the Army, so I can't tell you for, none of the other large primes on the parts that work for the Army had any shutdowns as I recall, and I'll confirm that for you.

The small companies that shut down, I don't know the number. It was a modest number, maybe 10 or 20 that shut down at various points. As of right now I believe everybody's open.

DWG: Those include the small --

Dr. Jette: I'm sorry. Say again?

DWG: The small companies and the primes?

Dr. Jette: Yeah, all the primes are open. And all the subs, I believe I don't have any subs that are closed right now, but I'll see if I can get that answer for you real quick.

DWG: Thank you, I appreciate it.

DWG: Aaron Mehta, Defense News.

DWG: Thanks very much.

I wanted to just follow up on Ashleigh's question from earlier about the IM-SHORAD. Please explain what the delay decision was and what the risk at this point is on that program given the software challenges that have been reported about that.

Gen. Murray: It was a combination of software challenges and adjusting to the COVID environment. When you're working a test like that or a run-up like that for the test, it's almost impossible to maintain the six feet of social distancing. So

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it's getting the right PPE in place and then the software issues we had.

So the company that's doing that has got additional people on site right now working the software issues. That was the CEO I talked to this morning about that issue. And within the slip that we've already made, both that CEO and I are absolutely focused on keeping this program on track.

So minor slip to the right. The delivery of IM-SHORAD in terms of first unit equipped remains on track.

DWG: I just wanted to clarify, the CEO, is that from Leonardo DRS?

Gen. Murray: It was a CEO, Ashleigh. I'm going to maintain that confidentiality.

DWG: Aaron, have you got a follow-up?

DWG: Yes. Actually on something different, Iron Dome. There's a lot of pressure from Congress the last couple of months about Iron Dome and maybe trying to get that system out before the September 2021 date. Has any decision been made to expedite that? And is the Army looking at buying more than its expected procurement on that system?

Gen. Murray: All that is kind of answered in the Congressional Report we sent up. As it stands today we don't have an Iron Dome Battery. So we're going to receive the first Iron Dome Battery this fall and the second one at the beginning of next year. I think the dates are September/December, but I'll just say this fall and the beginning of next year.

And then it will take some time to train soldiers on a system they have never operated before. And we committed in that report and we've committed to Congress that we will expedite that as much as we possibly can.

But the fact of the matter remains, we don't have an Iron Dome Battery today. We haven't even received it yet and it will take some time to train soldiers on that entirely new system they've never operated before and to operate it safely.

We're also very clear that we're going to try the best we can to integrate Iron Dome into the IBCS architecture because we're not interested in stand-alone systems. All the advantages that Bruce talked about up front, we want that for our air defense networks, our layered air defense networks. So we're going to work this fall and spring and try and integrate Iron Dome as it exists into our IBCS architecture, and we're going to host an Indirect Fire Protection Capability, better known as IFPC, so that fixed and semi-fixed air defense system, a shoot-off in the fall of '21 which everybody is welcome to come to to show us. And one of the key things are going to be how you integrate into our IBCS architecture. So [ROTHEO], Iron Dome, whoever wants to come show us how they want to do this and then show off their system is more than welcome to participate.

Dr. Jette: December 20th is delivery of the first system. December 2020. And February 2021 is the second system. And much as Mike says, okay, now you've got the hardware, now we've got the rest of it to do, or really he does, and the operational side of the Army with the acquisition side in support.

Let me touch base also on the IFPC approach. Iron Dome is certainly a great system. This integration, though, is the critical piece that we want to get to. We want to make sure that the door is open for any country that wants to participate. Some countries are kind of reluctant to tell you all about all the details of the secret sauce that they have inside of their system, so because we have built and owned IBCS so carefully, it is a system that we own the code to and we're able to share as we would like. It gives us an interface control that is more open to our control than any other system that we're currently using.

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The end state of that is it makes it easier for other countries to bring their systems to bear and be able to modularize and connect to us as opposed to making them break everything apart and hand us the pieces.

So we've really bent over backwards to try and find the best assemblage of systems possible.

DWG: Ellen Milhiser of Synopsis. Are you on the line and do you have a question?

Matthew Cox of Military.com, do you have a question?

DWG: Yes, I do.

Thank you both of you for doing this today.

General Murray, this question is for you but also Dr. Jette, you may want to speak to it as well.

We've talked a lot over the past months about next generation squad weapon, [IVAF], ENVGP on the soldier lethality efforts. I just wondered, is there anything else that maybe you'd like to talk about that's in the works for a soldier lethality kit that may be ten years down the road? What's your next goal to get to that will improve lethality as far as kit goes" Things like that?

Aa: You didn't mention the cite that goes along with Next Gen Squad Weapon --

DWG: It is part of it then?

Gen. Murray: It is, and that's a key part.

The Mundane stuff, Matt, that's important to our soldiers, lightening the load. So energy storage. How do we take the

burden off of the amount of batteries kids have to carry every day. So that's ongoing. In terms of, it's not really mundane, but the whole [inaudible] health and fitness. We've got this effort going on called SOSU, so how do you monitor soldiers so you can tell when a soldier has a problem prior to the soldier having a problem? How do you monitor the health status of a soldier so a squad leader can understand what's going on with the members of his squad from a dehydration standpoint, from an overheating standpoint, from a heat issue? How do you keep track of them when they're out on a land nav course through technology so you don't have kids lost in the woods for extended periods of time or you understand when they're in trouble.

And then the cost and effort to lighten the load. So continual changes to helmets, body armor, new materiel for body armor, making them just as strong but a lot lighter so we can reduce the load.

I think overall the effort is, and you've probably heard some of this, is how do we begin to look at not the individual soldier but the squad as a system? Everything else we look at as a system. A Bradley's a system, an Abrams is a system, but how do we begin to look at the squad as a system to increase that lethality over time.

DWG: Michael Gordon of the Wall Street Journal.

DWG: There was a mention earlier of Defender 20 and from what I heard how that might have figured into your plans. Is there anything in the abridged version of Defender 20 and [FOLIN] that has implications or utility for what you're working on now? And what was it that you would have used the larger exercise to do had it occurred?

Gen. Murray: From an equipping technology standpoint, we didn't lose a lot because the sensor to shooter work that Mr. Willie Nelson was working was really the key technology and material we were trying to work. So we got that done before it was

curtailed.

What we lost was the largest exercise we've done and the largest deployment of forces to Europe in a very, very long time. There were a number of learning objectives we were trying to achieve, not from a technology standpoint, but from looking at different types of formations we're going to need going forward.

If we're going to have the long-range precision fires that we're talking about having in formations, there may be different formations we need to command and control those fires, and what's the right echelon, if you will, for those capabilities. Is it at the theater level, the operational level, or the tactical level?

So we had a series of things we want to look at, more from an organizational standpoint, just given the opportunity that Defender presented that we're looking not only at the scaled-down version in Poland, but we're also looking at Defender 21 and we're looking at home station training exercises and we're looking at exercises done at the Combat Training Centers and the warfighters, the Leavenworth run exercises where you take corps and divisions through their paces to try to go back to recapture some of that thing that we were looking for. It's just hard to replicate what Defender 20 offered us.

DWG: Thank you.

DWG: Antoine [Shudakov] of TASS, are you on the line and do you have a question?

DWG: No questions. Thank you.

DWG: So I'm moving to Ashley Tressel, Inside Defense.

DWG: Thank you both for your time.

General Murray, last time we heard from you you mentioned that

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you were concerned about the air and missile defense programs that had certain testing events coming up I think in the summer. Do you have any updates on that? Are you still concerned about those?

Gen. Murray: I'm always concerned, Ashley. IBCS and IM-SHORAD we talked about. Those are the two that I mentioned last time and there's really no change in status since the last time we talked. So I remain concerned because they need to stay on track and I focus on it every day, and like I said, we go through these briefings once every week in terms of the status check, if you will, where we need to be in Army terms and go/no-go brief. And as of yesterday everything is on track for the testing this fall.

DWG: John Naylor of Yahoo News?

DWG: Thank you. A question for General Murray.

As sort of the Army's most senior futurist, how has the pandemic affected the way you think about future national security challenges and maybe the way that your fellow futurists in the command model and wargame out future scenarios?

And sort of corollary to that, have you or somebody [paid] to imagine what the future is going to look like, being surprised by the pandemic and particularly how it's affected the United States?

Gen. Murray: I may be the chief futurist but I've got lots of seniors to me that I get help from all the time in terms of the future.

The one thing I'd say, Matthew, is when you look into the future one thing you've got to understand is you've got to tell yourself right up front you're going to be wrong. And as we look at the future, it is much more than looking to see what our near peers are doing from a technology standpoint and where

potential adversaries will be in the future. It's demographics, it's organization, it's economies, it's pandemics. So what we're working on right now is really four alternative futures. It's a pretty wide shot group. The further out you go the wider it gets that we can begin to work our way back.

And I've got, as part of Army Futures Command is the Army's medical research, and I've got some really, really smart doctors and folks that specialize in viruses. They were a key part of Ebola research, they were a key part of SARS research, and Zika, and they're absolutely a key part of the research that's going on right now. What they have told me on numerous occasions, and I forget the exact years, but over a 60-year period we had two new Coronaviruses and I think the number is, in the last 16 years we've had five new Coronaviruses emerge in the world.

So I absolutely think that this type of event has to be a part of, as we begin to look into the future, how we prepare for that as a military, as a country, as a world, is absolutely some of the key thinking that is going on as we look at these four alternative futures.

DWG: General, I'm sorry, I'm just fascinated by that and I didn't get the number down right. Over a 50 year period there were two new Coronaviruses and --

Gen. Murray: I will get you the exact. In my mind I recall over the last 50 or 60 years two new Coronaviruses; in the last 16, five. But I will get you the exact numbers.

DWG: All right. Wow, that is striking.

Gen. Murray: I think it's natural. It's become a global economy and as globalization has expanded, I just think this has to be in our mind going forward. The chance of this happening again are not zero for sure.

DWG: Jackson Barnett of FedScoop, are you on and do you have a

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question?

Okay, Sidney Freedberg of Breaking Defense, are you on and do you have a question?

DWG: I am on and I always have many, many important questions.

General, Dr. Jette, thanks very much for doing this.

I wanted to talk about the sensor/shooter work in a bit more detail. You mentioned, you've heard a bit about the experiments done I guess with the AB&T team in what was, what happened of Defender 20. I'd like to hear more about what particularly they were testing. Was that a satellite-based architecture? Was it ground-based? Was it all the above? The units involved?

And what will be the sort of convergence, converting tests out in the Southwest desert which you said might be August/September, I believe General Murray. Then of course that will roll into perhaps more joint experimentation you said in '21.

Walk us through what systems are forming part of that, what kinds of architecture -- space and terrestrial -- you're exploring for those. And just how hard the AI and software challenge is to get all those things to work together.

Gen. Murray: Sidney, yes, you always have I think you said important questions. But I will admit you always have questions. [Laughter].

The answer on Mr. Nelson's what was all connected, it was all the above. It was overhead imagery, both from an exo-atmospheric and then obviously from ground and air-breathing sensors. It was links directly to a firing unit, and I can't remember the name of the number that goes along with the firing unit but it was a U.S. Army Europe firing unit that was part of the experimentation.

DWG: -- MORS?

Gen. Murray: It was field artillery, cannon artillery.

And then in the Southwest desert this fall, so from -- I owe Congress some information so I'm trying not to get in front of Congress on this either because they hate it when they read it in the press first. So it will be more of the same plus we're going to wrap in some of the other cross-functional team efforts.

And there will absolutely be an element of the AI Task Force that will be a part of that.

You've probably heard me say this before. It just occurred to me when we stood up the cross-functional teams, we started the modernization priorities that an individual capability is interesting, but the effect is greater than the sum of the parts. There has to be connections between these, and that's really I think the secret sauce that I'm not going to explain in detail ever, that how do you make these connections and how do you make the sum of it greater than the individual parts?

The Southwest desert, you can call it an experiment, you can call it a demonstration, and right now the plan is that we're going to do this every year. I've driven the team very hard to come up with learning objectives for that exercise. So go into this exercise every year with a clear statement of what it is we know, what it is we think we know, and what it is we don't know but we need to. So it becomes a very focused learning experience every fall as we continue to mature this network, if you will, or this architecture that brings the sensors to the right shooter and through the right headquarters.

DWG: Understood. So definitely, I guess there's no way to not involve the network CFT in the fall. It sounds like long-range fires and perhaps air and missile defense are also involved.

Are those correct assumptions? Or can you speak to any of the others CFTs? You have right of them all told. All of them will eventually play some fall, but this fall it sounds like it's going to be at least those three, LRPF, AMD and Network.

Gen. Murray: I'm going to try to drag them all into this experience. The AMD right now I'm not going to -- I'm very cautious of because of the two major tests they've got going on this fall in terms of IBCS and IMC, they key part, the AI Task Force obviously a key part, Fires, long-range precision fires obviously a key part, future vertical lift is going to play a key role, NGCB is going to play a supporting role this time around. But the major thing we're trying to work is continue to build on this sensor to shooter methodology.

DWG: Lauren Williams of FCW, are you on and do you have a question?

DWG: Yes. Thank you all for doing this.

I wanted to get your thoughts on acquisition trends during the pandemic, specifically with OTAs and other agreements outside of the FAR and whether you've seen an uptick in that use and in what areas?

Dr. Jette: Really we haven't seen any change in the planning. Acquisition strategies are built over a period of time so they're planned out and we haven't really seen a big change, really I haven't seen any noticeable change in the application of either OTAs or FAR contracts being impacted by COVID-19. We're pretty much continuing to march. Our perspective is that COVID-19, while something we have to keep an eye on and try to make sure we mitigate any impact it may have, it does not need to be the thing that drives our long-range planning strategy, particularly for acquisitions. It's really not affecting any specific trends with respect to large acquisitions. Contract type anyway.

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DWG: Thank you. And my follow-up is do you see any impact going forward as the transition to reopening plays out through the rest of the year? Are there any particular programs that you think could be impacted by that?

Dr. Jette: Certainly a number of our programs are dependent on travel, on hotels, on being able to freely move about different states and each state has a different set of rules. Certainly being a federal government entity any of our federal employees can pretty much get where they need to be and do things. Sometimes there are hiccups that the private contractor people may run into, challenges in trying to get proper accommodations, et cetera.

So when that's lifted, it will take some of the logistics burden off of the table for the contractors and contracts.

A second piece is transportation and travel. Some of the difficulty in trying to fly from Point A to Point B and do it on a scheduled basis should get easier.

I think probably the largest portion of challenge that would be out there that will really start changing is when we feel comfortable about changing the mandates associated with social distancing. There just isn't a lot of room inside of a TOC and if you want to do testing, that's I think in many ways a lot of our challenges are General Murray's challenge because of the tests that he has to run with real troops in real places doing real things. Getting them there, getting them back. I'll let him comment on it, but that's more the area that I would think is more difficult to deal with and will be easier to resolve once some of the constraints are lifted.

General Murray, you may want to comment.

Gen. Murray: Thanks, Dr. Jette.

We've been working through this, so this is like not new this

week. Over the last 35-40 days we've worked through the process in terms of exceptions to policy for people to travel for key events. We've worked through with the testing community, this is a concept, we call them soft bubbles all the way up to a hard bubble in terms of what we need to have in place based on the case rates at that installation or the case rates in the surrounding community. So it's become a very deliberate process to get people where they need to be and work through some of the issues that Dr. Jette talked about. Not only every state's different, every installation is different. So coordination with the installation we're traveling to to make sure that there's no requirement for a 14-day quarantine, for instance, when they travel there. And if there is, accounting for that in the travel plans and the accommodations.

So it's made things more difficult, but I would say that it has not slowed us down to date. It will get easier as restrictions change.

DWG: Thank you.

DWG: Lee Hudson of Aviation Week. Are you on and do you have a question?

DWG: I am. Thanks for doing this.

Mike White, the head of hypersonics at OSD said the Air Force made a decision in May 2017 to launch the Arrow Development Program, for [inaudible] hypersonic missile. How did the Air Force's decision to create Arrow influence the Army to create LRHW? And what impact has the Air Force's decision to cancel Hacksaw impacted LRHW? Does it have an impact on cost, technical support, et cetera?

Dr. Jette: The Army's approach to long-range hypersonic weapons is totally independent of the Air Force. We're very closely tied to the Navy. That's not to say we don't work with the Air Force, but their program, we're not dependent upon their

programs for the success of our programs. We do share data and we do share information but the development efforts they're doing is for a different environment and a different application than we have.

So we developed our own strategy. We worked and coordinated it with the Navy. It lines very well with the Navy's strategy. The two of us are in very good cooperation with each other. And we have continued on. The cancellation of any of the Air Force programs or DARPA programs are not central to an issue that we have at this point. Things are moving.

DWG: Thank you.

DWG: We just have a few minutes left. Matthew Binard of Defense Daily, do you have a question?

DWG: Yes. General Murray, you said during a recent on-line event regarding your outlook for budget that you'd kind of be lucky to even see a flat line, that 3-5 percent growth is probably not likely. When you compound that in with the effect of the pandemic, is this going to lead to just more expensive night courts moving forward? Does this kind of evolve into something where you end up looking at the signature systems because of that budgetary pressure?

Gen. Murray: My comments were based on the expenditures we've had because of COVID. And I think most people were thinking flat line even before COVID, and I know that both the Secretary of Defense, Secretary of the Army have said publicly that in order to continue to modernize we're going to need 3-5 percent real growth. So all that is kind of, the facts going into COVID, my comments were based on, my belief is, and it's my belief. I don't know this for a fact. Some of this specifics to your question, it's really kind of too early to tell until we see the impact to the defense budget, if there is impact to the defense budget.

I personally just believe that there probably will be an impact to the defense budget regardless of anything else that happens in the future.

My belief is, when I look at the night courts or the deep dives, whatever you prefer to call them. We've been through three years now, and Dr. Jette knows this as well as I do, and I've said this before too. The pickings are getting pretty slim inside of the equipping peg to continue to fully fund our modernization priorities. Does that mean that it's no longer 31+3? Not necessarily. We've got to look holistically. If defense budgets do in fact go down or even flat line, we're going to have to look holistically at the entire equipping portfolio, continue to make some decisions within everything else where we can, and then potentially look at production schedules. It's just, it's tight right now in terms of the budget we got for modernization, and we have to modernize now. I mean in the 1940s we modernized. In the 1980s we modernized. And it's 2020. That's 40 years. If we don't modernize now with everything we have going on, the chances are that we're not going to modernize for a long time. And not only my kids will be on the same equipment I was as a young officer, my grandkids will be on the same equipment I was as a young officer. As a country we shouldn't accept that. We owe our kids better than that.

So now is the time to modernize and I have said in the past, there's been tough decisions in the past. If my gut is correct, there's going to be even tougher decisions in the future.

DWG: That's perhaps a good place to end, it is just after 3 o'clock. But let me just as you both gentlemen if there are any closing comments you'd like to make that you didn't get a chance to fit in for us?

Dr. Jette: I would just say first, thank you all for taking the time. Oddly enough, it's always good to actually get a chance to talk to the press about the different things that we're up

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to. Hopefully you can find tidbits of value in some of the things that we say.

I know when I got out of the Army, when I retired, I got out, I walked away, and it was almost like taking your glasses off. You just don't realize when you're inside working these issues day in and day out, you just don't realize how many of the details you know, and the minute you walk away how little you do see.

So I appreciate and understand your difficulty in sometimes trying to understand what the heck are we up to? So if we can help and it's certainly not something that's going to put any of our soldiers at risk, now or in the future, we'd be happy to share it and the American public deserves that as we try to be good stewards of the taxpayers' money and the responsibilities we've been given.

I think that overall we're doing pretty well, given some of the circumstances right now with COVID. I think we will continue to do well as we move forward from here. Will there be any hiccups and bumps in the road? I think there will be some that we'll have to wrestle with as we encounter spend rates and things like that, but we will work with them and move forward. We'll do the best we can to try and meet the needs for General Murray and the testing efforts that he's got laid in front so that we can continue to do refinements on the technology needs so that we can make sure the new systems come along and meet his needs, the needs he's finding for the Army.

That's kind of my circle back. Thanks again.

DWG: Thank you, sir.

General Murray, closing thoughts?

Gen. Murray: A couple of things real quick. It's not the first time Dr. Jette and I have done these types of things, but I just

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find it amazing that despite the restrictions that the ASALT, ASCT team has been under in the last 30, 35, or 40 days, in all the stay at home directives from various governors, the social distancing, the telework, that yeah, there's been a few bumps in the road, a few hiccups. But everything is on track. And I've got to stop and just remind myself of that every day, that we've managed to keep this on track and it's been through a lot of great work by a lot of great people and a lot of great cooperation.

I also find it amazing that the Army has not wavered on what's important to it in terms of modernization, in terms of the six modernization priorities, the 31+3 signature systems. There's not been a single conversation about woe is us that we've got to go back and look at this.

So the senior leadership of the Army is absolutely committed to what we started a couple of years ago and the support that we need from them to do that, both from, and in many cases where Congress is in the cycle, and there's been lots of conversations virtually with the various committees in terms of what the Army's trying to do. And for the most part, the commitment of Congress to continue to fund the Army's modernization efforts is there as well.

So there's a couple of things that I've got to stop and think about every once in a while that this enterprise has been able to keep on track and moving forward which I think is incredibly important to our soldiers.

And I do also appreciate your time today.

Dr. Jette: Thank you, General Murray.

Thanks to everyone for joining us. I'm sorry we didn't get to quite everyone's questions.

I particularly want to thank Carnegie Corporation of New York

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for its stalwart support of these kinds of conversations which in my humble opinion are just as important if not more so than they were before the pandemic.

Stand by for additional invitations coming for June events. We're working hard to try to get something on defense health issues. I think we will. And we've got an Air Force four-star that many of you haven't talked to who we will hopefully have a session with as well. So more to come.

Thanks to everyone. A special thanks to Army Public Affairs for making this possible. Thank you General Murray, thank you Dr. Jette.

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