

THE BROOKINGS INSTITUTION

WEBINAR

ASSESSING THE STATE OF THE AIR FORCE:
A CONVERSATION WITH GENERAL DAVID GOLDFEIN

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PARTICIPANTS:

Opening Remarks and Moderator:

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Special Introduction:

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Panelists:

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P R O C E E D I N G S

MR. O'HANLON: Good morning, everyone. I'm Mike O'Hanlon of the Foreign Policy program of the Brookings Institution and I would like to welcome you today, along with colleagues Frank Rose and retired General Lori Robinson, to an event in which we are privileged to host General David Goldfein, the chief of staff of the Air Force, in what is now his last month as chief of staff in military service after a distinguished 37 year career where he's done so much in America's armed forces for the country and around the world.

I would like to say a couple of more words by way of introduction. Our format today will then be that General Robinson, who is a nonresident fellow with us, and who spent much of her career with General Goldfein, would like to offer a word of welcome and warm wishes and hello. And then we will come back and I'll pose a few questions to the general about how the Air Force is doing, how he looks back on his tenure as chief of staff, and other jobs before that, and the challenges before the Air Force that he'll be handing off to his successor.

Frank Rose, my colleague at Brookings, will then specialize in or hone in a bit more on the topics of strategic and space forces, which, as you know, of course, is a particularly salient topic these days as we have just stood, or are in the process of standing up the U.S. space force, which is largely coming out of Air Force capabilities. So General Goldfein has been at the center of that.

And then, finally, we will take your questions from the audience for the last 20 minutes or so of our hour. And if you still want to write in with those questions by email, you could send them to Events@Brookings.edu.

One more very broad word of welcome, Brookings is of course a non-partisan organization. We're here to discuss the U.S. Air Force and military modernization. I am asked to inform that some people at Brookings may have affiliations with certain political campaigns, and you can find those on the website, but of course, that's not today's purpose and not the focus of the Brookings Institution.

So let me add a couple of more thoughts about General Goldfein, who I've been privileged to know now for at least a decade and I think met probably 20 years ago for the first time. He

graduated from the U.S. Air Force academy in 1983, he's a fighter pilot, he's served with distinction throughout much of the world. His most particular areas of expertise have been Europe and the broader Central Command Theater. But for also the last 10-12 years, he's been involved in key jobs in Washington, including the prestigious director of the Joint Staff, where he thought in a very ecumenical and joint way about all the challenges around the world, at just the moments when we started to see not only the continued problems in the broader Middle East region with ISIS and Al Qaeda and the wars in Iraq and Afghanistan, but also the increasing rise and resurgence of Russia and China, the return of great power competition. And he's certainly been at the forefront of the nation's response to all of that in the last dozen years or so, not least, of course, in the last four as one of the members of the Joint Chiefs of Staff and the highest ranking military officer in the U.S. Air Force.

So, General Goldfein, it's just a great honor and pleasure to have you here. I just want to thank you on behalf of all of us at Brookings and so many Americans for what you've done for the country. And, as I say, I have a friend -- your friend as well -- General Robinson, who would now like to chime in with a couple of warm wishes and words of her own.

So, Lori, if you're there, the floor is now over to you please.

GENERAL ROBINSON: First of all, it is an absolute honor to be a part of the introduction of my dear friend, General Goldfein. Michael -- and I'm going to get emotional here -- Michael and Frank are going to ask him the real hard policy questions, and I'll leave that to them, but I wanted to introduce him to all of you, to the entire audience, as an airman's airman. I had the privilege to work for General Goldfein in Qatar, and it was amazing just to watch him. All the airman just flock around him, not matter where he went.

I saw the same thing when he was the chief. Every time he went someplace, the airmen just flocked around him, wanted to listen to what he had to say, wanted to be a part of what he was bringing to our Air Force. His passion for Air Force and our airmen is unsurpassed. His lens was also to look at what was best for our Air Force and our airmen and their readiness. You know, one of his greatest famous saying is wherever there is a challenge comes an opportunity. His positive outlook is so contagious.

While General Goldfein is a personal friend and hero, I will tell you that Team Goldfein is unbeatable. Between the chief's personal touch for our airman, Dawn's love for our Air Force family — she talks to each of the family members as her own. Team Robinson wants to thank you, Team Goldfein, that you made all of us understand that we're a part of something bigger than ourselves. You made all of us better. Your United States Air Force will miss Team Goldfein, but we're grateful for all that you've done.

Have a great event with Brookings and, Chief, we're so proud of you and Dawn. Team Robinson says congratulations.

GENERAL GOLDFEIN: Thanks so much, Lori.

MR. O'HANLON: General Robinson, thank you. And, General Goldfein, on behalf of all of us, I just want to say thank you and congratulations and we're really glad to have you join us today.

GENERAL GOLDFEIN: Thanks. And, boy, it doesn't get any better than having somebody that I admire, like Lori Robinson, who has been such an incredible role model for all of us, so thanks Team Robinson.

GENERAL ROBINSON: Thank you.

MR. O'HANLON: And, by the way, I do want to come back in a few minutes, General Goldfein, in a few minutes, if I could, to sort of the people side of the Air Force, which of course is as important as anything. And I know you feel that way. And that's been a big part of your job as chief, is thinking about the people. And, of course, we have some special challenges in the country today that have really developed over the last few weeks in particular, so I'll be asking you to speak to that question of these sort of, you know, well-being of the state of the people of the Air Force a little bit later.

Let me being, if I could, with just a broad question about the state of the Air Force writ large. You've been involved in a number of innovation and modernization efforts, everything from what's called the Third Offset to the return of great power competition, now the National Defense Strategy that Secretary Mattis devised when he was running the Pentagon that you contributed to. There are Air Force concepts that have contributed to this, like multi-domain operations, and now a new concept for integrated command and control.

And I want to get into some specifics in a minute, but if I could just put that big question before you of how do you think about where the Air Force has come over these last four years, or if you wish over the last eight years, since you were vice chief before you were chief. Just love to get your broad 30,000 foot view on where the Air Force has come in this time please.

GENERAL GOLDFEIN: Yeah, thanks, Michael.

You know, many of us have been involved in war games over the last -- and like you say 20 years since you and I have known each other -- and the scenario we often pick is the China scenario, in align with the National Defense Strategy. And for many years they have not ended well. You know, we've all walked away from those war games thinking, okay, it's time to get back to the drawing board and take a look at which kind of a joint force we need to field that can turn the results of these war games around. Of course, we always play against our best assessment of the threat based on where we see them investing and moving.

So we ran about 2,000 iterations of various Force elements and we came up with a Force that actually did quite well -- the first time, by the way, that I've seen in a number of years. And it highlighted for me as chief early in my tenure that there are four key areas that we had to invest in if we were going to build this Force that we need to be able to compete, deter, and if deterrence fails, win.

And those four key areas are, number one, space. It was never a guarantee that if you moved first in space that you were going to win. You know, winning -- as Secretary Mattis used to say, winning on the battlefield is not an American birthright. You've got to earn it. But in every game we played, if you were the second mover, you lost. So it became very clear to us that our first level of investment we had to make in was in space superiority. That was number one.

Number two was connecting this Force in ways that it's not currently connected. And this is not F-22s and F-35s talking to each other, this is an F-25 talking to a B-52 that's 100 years old, to an X-37 that's in low earth orbit or other orbits, to a Marine Air-Ground Task Force, to a brigade combat team, and to a tactical submarine that's operating off of adversary shores. Today, our systems are not optimized to be able to operate simultaneously together in all domain operations. And so that was the secondary of investment that I will probably spend a little time on today that we had to move into.

The third area was we fought, you know, elements from a far, you know, a standoff versus stand in, penetrating versus standoff. And we tried all of one and we tried all of another. Neither of them actually succeeded. The one that succeeded was the hybrid approach that said there are some portions of the joint team that has to penetrate, persist, proliferate, protect, and punish the adversary. And there's some portion of the Force that has to standoff and be outside of the threat area. And so getting that hybrid Force right was the third element of investment.

And the fourth one was assuming that logistics will be under attack, which is not something we faced in the last 19 years. Let's be honest. I've been able to flow whatever forces I needed into theater in whatever timeframe or mode I wanted and I was never under attack. That's a false assumption for a future conflict.

So we found that if we could invest in those four key areas we could build a Force that actually could turn the outcome of the war games around in the most stressing scenarios.

The only way to pay for that is to get rid of those things that don't play well and don't play heavily in that 2030 fight. That's the path that the service has been on. It is a difficult sell on the Hill because what I'm preaching is highways in a truck town and I have yet to find a highway lobbyist, but I sure have found a lot of truckers.

And so trying to get us to think about digital engineering and architecture and common data as the currency of future warfare has been this four year mantra that we've been on.

I would say that I'm pretty satisfied with where we've landed. This is a tough conversation and we learned long ago that if you're trying to sell it with power point and lightning bolts, it's all aspiration and it will get no support. When you bring real capability to bear, and show real impact with combat capability, you can't talk about a cloud, you've got to build one. You can't talk about data architecture, you've got to build that. You can't have lightning bolts, you've got to build these things.

So we have been able to demonstrate performance over the course of these four years. And so I'm pretty happy with where we are right now as an Air Force and as a joint team going forward.

MR. O'HANLON: That's a fantastic framing. And I wanted, if I could, to bear down a little bit more and ask you — you already mentioned three or four key areas, like space, satellite, survivability,

and command and control interconnectivity and being able to move quickly, but I wanted to also see if we could bring it even down one level below to more specifics about either the kinds of doctrines and ideas that you pushed, that you think were most important, whether it's the Third Offset under the previous administration and the beginning of your tenure, whether it is the multi-domain operations concept that you have really pushed, along with the Army, as I understand the origins of that, whether it's with this new command and control construct, where I think the Air Force is in the lead. Maybe you want to say a word about that.

So broad concepts, doctrines, and how they actually have concrete specific manifestations. That would be one way to look at my question. The other would be can you give a couple of examples of specific types of hardware that are unclassified that you're able to speak about today that you've managed to bring fairly far along in the development and fielding process.

Thank you.

GENERAL GOLDFEIN: Yeah, thanks, Michael. You know, part of our challenge of course is that we've done the usual the usual thing and we've now got acronym soup. I mean so four years ago I walked out on stage at my first speech at AFA and said this is all about multi-domain operations, multi-domain command and control. We're partnering with the other service and we're moving out. And then it wasn't about two months later I went over to London and delivered a speech and that -- you know, you plant seeds as a chief, right, sometimes those seeds, those ideas, hit fertile soil and sometimes they hit rocks, right. And so in NATO it hit fertile soil and from that became multi-domain command and control centers of excellence and things we were doing.

And then along the way we went from multi-domain operations to all domain operations, then we went to joint all domain operations to joint all domain command and control. And it doesn't surprise me if we have folks out there who are just a bit confused about the acronym soup that we have going on. But let me just share with you that it's all one and the same. The concept is this, the days of sequential warfare, where we would come in perhaps as an air component and beat down the defenses and build up naval and land forces over some period of time and then roll in with the land campaign, I think that is an outdated framework for future warfare.

The side that wins is going to have a couple of things. Number one, it's going to have access to data information and deny the (inaudible) of the adversary, and it will be operating at speeds that we have not had to operate in the last 19 years. If you think about it, it's almost unparalleled in history how much control we have had over the (inaudible) of time in conflict. I mean you probably remember this, right, we all do -- we announced to the enemy six months before we went in Mosul when we were coming, how we were coming, where we were coming from, and there was nothing they could do about it. Such is the nature of controlling time as an element of warfare. Time is going to be the key attribute that we're going to have to master in the next one. And we're going to have to operate at machine speeds to operate at the speeds to counter our adversaries and, in fact, cause them the dilemmas that we need to cause them so that they question and pause long enough to wonder whether they can actually achieve their military objectives or political objectives using military force. Hence, deterrence in the 21st century.

So going back to demonstrating capability versus aspirational power point. So one of our first demonstrations -- and, oh, by the way, one of the first guys I talked to when we started down this path four years ago was Eric Schmidt, you know, coming out of Google, and he had two pieces of advice. He said, number one, he says, Dave, don't eat the entire elephant, it will crush you with its weight and you will not get anywhere. He goes, pick a smaller edible animal and then go after it. And he said and no more power point, no more lightning bolts, just start demonstrating success, success breeds future success.

So that became the foundation of where we went forward. So I'll describe the first demonstration. And I'll do this all in unclassified terms. We took a space asset, we built the algorithms. All of these were, by the way, on common digital architecture and common data framework, right. So uninhibited access to data between all of these systems. We put an enemy naval vessel of the Gulf of -- this is all live fly by the way -- put an enemy naval vessel in the Gulf, we put a space asset -- gave it the algorithms built into it and said, okay, see if you can find the vessel. It did, but it couldn't get ID criteria, it couldn't get identification, and it couldn't get a decision quality or target quality coordinates. So it passed it to a penetrating ISR asset who went in, put its sensors on it -- 95 percent confidence of ID, target

quality coordinates. Passed that to a C2 asset that had built into it the full algorithms for what the commander's intent was from non kinetic through kinetic, chose an Aegis cruiser, sent the data to the Aegis cruiser, the Aegis cruiser team got the data, validated it, and then took the shot. What's most important about that kill chain I just described is that the first human in that loop was the Aegis cruiser shooter. Everything else occurred at machine speeds. And the only time required to close that kill chain was the time it took for the penetrating ISR asset to get close enough to use its sensors. Had we had more ubiquitous sensing, it would have even cut that time down.

That gives you a sense of the speed of warfare that we have got to achieve. The challenge and the opportunity is that -- again, I'm talking highways and trying to sell this in a truck town. And most of the trucks that I'm trying to get rid of to be able to buy the highway and the networking that we need, have got constituency, right, they've got jobs associated with them. And the other challenge we have is that -- it wouldn't surprise anybody listening -- that the Air Force, of all the services, has the largest portfolio of classified programs. And much of what we are doing here is in the classified realm. So I'm going to the Hill, I've tripled my number of engagements in classified settings with members and staff, and when I sit down with them and I explain where we're headed, it's an aha moment. They say, okay, I get it.

So when we talk about joint all domain operations and joint all domain command and control, this is not about big screens and a big headquarters, like Lori and I ran together, this is distributed, it's resilient, it's had multiple pathways to communicate, and it allows us to close thousands of kill chains in hundreds of hours and take humans from being in the loop, where we have them today, to on the loop where we need them, to only do what humans need to do. This has been the central feature of moving forward into joint all domain operations. And here's the good news, I'm no longer in any discussions in this building with our international teammates or on the Hill. In the last six months to a year I have not had one discussion about whether we should do this. Every discussion I'm having is how we do this. That's progress.

MR. O'HANLON: Fantastic. And I know Frank's going to follow up on a couple of the specifics that you just alluded to, and I'll pass the baton to him, but first I have two more questions for

you. And one is about the budget environment and one is going to be about the people of the Air Force and how you see that.

On the budget, I think the last time you and I were — when I was lucky to have you at Brookings a couple of years ago, these were sort of headier times for the budget and the defense budget had been boosted up quite a bit. Even before the COVID crisis, we saw the Trump Administration's projections for longer-term defense spending essentially flat at a time when General Dunford, the previous chairman, and when the independent commission on the National Defense Strategy of 2018 had all basically said you need real dollar growth at 3 to 5 percent per year into the indefinite future to really build the kind of defense program and sustain it. And, again, even before COVID the Trump Administration wasn't projecting that.

Secretary Esper joined us at Brookings two months ago for a format like this at which he said that his guess was that COVID may put further downward pressure on the defense budget. And so, without asking you to prognosticate about that, I just wonder if there were a couple of areas within the broader defense space, or the Air Force in particular, that you saw as places we could afford perhaps if necessary to cut back even above and beyond the plans that you've already put in place, whether it's in the size of the military, whether it's in certain kinds of capabilities, whether we can delay certain weapons programs, whether we could curtail the F-35? Is there anything that you would put on the chopping block if — you know, maybe under protest, but nonetheless that you would see as something we could make do without if absolutely necessary, albeit at greater risk?

Over to you.

GENERAL GOLDFEIN: Yes. You know, I don't think anyone, certainly nobody I talked to, is projecting budget growth. Everyone is projecting flat line as the best outcome and likely budget decline.

And so, for me, that makes it even more important that we don't miss the opportunity we have right now to getting the digital engineering and the data architecture right. Because the future — you know, I'm often asked, well, so the future of the Air Force, is it manned, unmanned, is it penetrating, is it standoff, is it attributable, unattributable, you know, is it conventional, unconventional. And the

answer is it's all of the above. The future of the Air Force is going to have a 100 year old B-52 flying in the same time as a two year old X-37 that's going to be flying with an I don't know how many year old Aegis cruiser that's going to be flying at the same time as a brand new unmanned submarine. And we're going to have in all the services all of these attributes, some that are legacy and some that are new.

And so, what industry has learned that we have got to follow is that you actually can't skip the step of digital engineering and data architecture. You know, we tend to throw -- and some throw out -- and I tell this to members of Congress, I say if somebody comes over here and throws out the game changers, artificial intelligence, hypersonics, directed energy, quantum -- you know, and they are all game changers, I said, hey, ask the next important question, exactly what data are you planning on accessing to do artificial intelligence, and how are you going to get that.

Okay, let's talk about hypersonics. Exactly how are you going to find, fix, and then finish with a long range hypersonic weapon? How are you going to get mid-course guidance against a moving target? And what you find sometimes is it's a miracle spike on the program chart, right, that has to occur when all the planets align. Actually, it's not a miracle. You've got to do it, you've got to invest in it.

You know, Google did not become an AI company before they got their digital architecture right. And they didn't become an AI company until they first got common access to data. So what I've told the Secretary and others, I said, you know, if you want to talk what you can do for all of your successors, is get this foundational set right and then everything that follows will connect to open mission system. And, heck, I don't know sitting here what's going to go in the bay of that B-52 or the bay of that X-37 or the tube of that tactical submarine, and I don't have to. I just know if we can connect it, there's going to be a young soldier/sailor/airman/ marine who are going to figure this out and they are going to cause China a world of problems. And that's what we've got to do.

And so for me I can't tell you a single platform, sensor, or weapon that I'm all that fired up about. I got plenty of trucks, that's not a problem for me. I need highways, I need resilient pathways to communicate, to change the cost curve, because right now it is so much more expensive to defend than it is to attack, whether you want to talk bases or cyber or what have you. We've got to flip that curve. And industry actually is a head of us in this and I think is going to help us get to where we need to go. But this

is the time to do it, especially facing tough budgets ahead.

MR. O'HANLON: Fantastic. Thank you.

And my last question is about the people of the Air Force who are incredible. I'll say that and volunteer that, and I'm sure you agree. But I do want to ask about sort of the state of diversity. And I mean diversity in a pretty broad way -- three specific ways. One of course, you're about to be succeeded by an African American chief of staff, which is a fantastic moment for the Air Force and for the country. That's very good news. We had Lori Robinson on earlier, Retired General Robinson, who is the first woman in U.S. military history to head a combatant command when she was in uniform. That's great news. The Air Force I believe has been better than the other services at having four star women in its ranks, which is also good news. On the other hand, there aren't many women or African Americans sort of at the senior ranks who might be coming in next.

And the other area where I'm curious about your thoughts on diversity is for let's say the -- especially mothers, but fathers and mothers who may want to leave the Air Force for a while during child raising years and then come back. And to what extent has the military been innovative enough about allowing a break in service and then welcoming back people who may want to rejoin? I realize that may not be a huge population group, but it strikes me as an important one.

So on any aspect of those personnel questions, I would love to hear your thoughts please, sir.

GENERAL GOLDFEIN: Yeah, thanks, Michael. You know, two things happened with the brutal killing of George Floyd. Something broke on the streets of America and America responded as Americans do, which is to gather together and protest a wrong. But the second thing that happened is something broke loose in the United States Air Force. And what broke loose is an opportunity for us to make long-term meaningful and lasting change that quite frankly we should have been doing before. And I take that completely on me. We were doing a lot of work towards becoming a more diverse force, but I think we have the opportunity in front of us right now to go to put on the gas and really move forward in ways that we need to move.

I look at the United State Air Force as the big ten service. And I'm not saying this

parochially, I just say this as a Joint Chief. We're the big ten service because we have the most diverse mission set. So we do leaflets to nukes and everything in between. We operate from below the surface in an missile launch facility to the outer reaches of space now with our space force, and every domain in between. And so if you think about it from a set of card tables in a high school gym, and a recruiter behind each card table, the question is what kind of kid lines up between each card table, right. I think you can actually sort of pick out the kids that would want to become the few, the proud, right, the Marines, or the kids who want to go out there and be more than they — be all you can be, you know, army of one. I mean, I think we can think to that.

So in the Air Force line, I've got to be a service where the first person in line is a young woman and she wants to be a pilot. I always dreamed of flying. And so she's got to see herself in us, and our culture has got to embrace her in ways that she feels completely part of this organization. And the next kid in line is this kid that wants to attack the enemy in cyber and is just fascinated by cyber. The next kid in line wants to do things in space. The next kid wants to be an elite defender to guard nuclear weapons. The next kid wants to — you name it, right. So we have such a diverse mission set that we ought to be the big ten service that attracts people from all walks of life and all backgrounds. And we ought to be the very best in the world at diversity, and we're not, but we can be.

And so the measures that we've put in place, that we're working on, are long-term aggressive measures to change the demographic to ensure that we are building a culture of inclusiveness at the squadron level, which is where it matters most, and that we are arming command teams with the tools they need to shift this. And as I've told commanders — and I've got another one going out to them this afternoon — I say, you know, history is not on our side here. If we follow history, we'll get a few things going and then September will arrive and COVID will return and flu season will start and hurricane season will hit — it's expected to particularly bad — and wildfires will begin and the election will go into high gear and we will get distracted and we will put this on the back burner. Shame on us if we let that happen. And so what — I've talked to commanders across the Air Force and said let's commit right now to making history wrong on this one, that we have the staying power to take the actions that we need to going forward.

General Brown -- I will tell you that a few years ago I started watching all my four stars, knowing that it was time to start looking for and grooming my successor. And so I put them up in front of other airmen, on the stage at AFA, got a chance to sort of watch them in action, and then it became very clear to me that the most capable officer I had on my team to step in to replace me was C.Q. Brown. Just an unbelievable officer. If you look at his background, you won't find one quite frankly that's better. He has commanded -- I mean think about just this part -- so here's a guy who's commanded in Europe, commanded in central command, and now commanding in the Pacific. He knows every international air chief from Africa and Europe with a personal relationship, every international air chief in the Middle East, and every international air chief in the Pacific and INDOPACOM. He's operated as a deputy commander of a combatant command in combat as CENTCOM, he's been the aide to the chief of staff of the Air Force. I mean this is a guy whose resume is just spectacular. And the wonderful thing is he and Sharine are an incredible team. So it's going to be fun actually to hand the flag to a good friend and a great, great officer to take this Air Force to newer heights.

MR. O'HANLON: Thank you very much. Is there a date for that transition already set by the way?

GENERAL GOLDFEIN: 6 August.

MR. O'HANLON: And thank you again for so much you've done and for the great answers to my questions.

Frank, over to you.

MR. ROSE: Great. Thanks very much, Mike.

Let me, General, echo Mike and Lori's comments by thanking you for your outstanding service to the Nation. Your leadership and vision for the Air Force will certainly be missed. And, on a personal note, let me thank you for the great cooperation that you and I had when I was at the State Department and you were the AFCENT commander when we were working with the Gulf Coalition on integrated air in missile defense. So thank you for that. And I'm so delighted that you'll be leaving the Air Force in such capable hands as General Brown, who I first met when he was your deputy at AFCENT. I think that's just a great appointment.

So my questions this morning focus on two areas, nuclear and outer space. And let's start with nuclear. Specifically, the nuclear modernization program. Now, critics of the current modernization program argue the program is too expensive, unnecessary, and potentially destabilizing. The two most controversial elements of the modernization program are Air Force programs, specifically the ground based strategic deterrent, intercontinental ballistic missile, and the long range standoff nuclear cruise missile.

General, I was wondering if you could take a few minutes to explain why you believe it's important for the United States to continue with the current modernization program, especially the ground based strategic deterrent and the long range standoff cruise missile.

GENERAL GOLDFEIN: Yes. Hey, thanks, Frank. And I'll just frame my answer looking primarily at Russia, because it's Russia that I think of most often when I think of the nuclear threat for two reasons. Number one, they've just completed their own modernization of their own triad and, number two, they have military leaders, up to Gerasimov, who speak openly about the use and the introduction of nuclear weapons in conflict. And they talk about tactical nuclear weapons, which I believe there's no such thing. Once you go nuclear, you're no longer tactical.

So in that framework of a country that has modernized ahead of us and talks about their use, now let's talk about the triad. There's two things that I tell members of congress when I'm asked on this issue -- and anybody else. My best military advice on this issue is two things. Number one, don't give up something for nothing, don't unilaterally disarm when you get nothing in return. That would be bad policy, that would be bad -- I would never as a military leader recommend that we would unilaterally disarm and get nothing for it in return. And, number two, never give up your second strike capability. One of the reasons we have 400 weapons buried in the northern tier is that no country on the planet has what it needs to take them all out. They're too deep, they don't know where they all are. And so, therefore, we always, in every scenario, have the opportunity to strike back, which in fact becomes the foundation of deterrence.

Should we get rid of that leg -- without going into classified -- but you're particularly aware our second strike capability is in jeopardy. And I would never as a military leader ever recommend

that we do that. Each leg of the triad was designed for a particular reason and without all three legs you would have to significantly change the STRATCOM commander's war plans. And you would have to significantly impact targets that today we hold at risk for the commander-in-chief.

And so it is going to be costly, there's no doubt about that. This is what's going to be a challenge and I think a debate is that this will be the first time that the Nation has tried to simultaneously modernize the nuclear enterprise while it's trying to modernize an aging conventional enterprise. The current budget does not allow you to do both. And so there are either going to be some significant trades made or we're going to have to find a fund for strategic nuclear deterrence that we can use to modernize, which is the way we did it before back in the Reagan era.

So I would just offer that in my mind I could never advise anybody to unilaterally disarm or give up second strike capability. And I do believe we have to have a debate about the way we're going to fund this essential part of our military going forward.

MR. ROSE: Great. Thanks very much, General.

Let's now pivot to space. General, throughout your tenure as chief of staff, you've spoken eloquently about the importance of outer space. Indeed, that's what you started off with this morning. Last year, as you know, congress made the decision to establish the United States Space Force.

So my question to you is this, first, can you describe how you are working with General Raymond, the chief of Space Operations, to ensure an effective transition of space personnel and capabilities from the Air Force to the Space Force?

And, second, despite the decision to create the Space Force, the air and space domains will remain closely interrelated. Indeed, that's the reason why the Air Force was initially assigned the mission in the first place. So as we stand up the space Force, what steps should be taken to ensure effective coordination and integration between the air domain and the space domain?

Thanks very much.

GENERAL GOLDFEIN: Thanks, Frank.

So I've been on my own personal journey on this and anyone listening could go back and

find my opening statements when this all began several years ago. And I was concerned about it, to be honest with you. And my concerns were based on the fact that we had come so far as an institution on integrating space and cyber in terms of joint war fighting that I was afraid that in our quest to build a separate service, we would separate space from the war fight and we would lose that joint integration that we achieved. And so it wasn't until I went down to Maxwell Air Force Base and sat down with our Schriever Scholars. And these are our young majors we send there for a Ph.D. in space. And as I'm talking through, you know, thoughts on a few subject, I'm watching the body language and it wasn't that positive -- pretty tense in the room. So finally I asked them, you know, this bunch of young majors, I said, hey, so a show of hands, how many of you think that it's time now to have a separate service for space. And every hand went up without hesitation. And so that was an important moment for me as chief, because these are my airmen telling me something, speaking truth to power.

So I started listening, reading, talking, spent a lot of time -- went to every -- both of our launch facilities and spent a lot of time with industry, and I came to the conclusion that when I look at the bandwidth of a chief of staff of an air force and I myself the question, who would move space forward faster, a chief of staff of an air force that does leaflets to nukes and everything in between, that has got the full range of missions, or a service chief that is singularly focused on space, harnessing the exponential improvements and advancement in the commercial space business. And it became clear to me that the time to build a service was now, that the President has this right, that a chief of a service that's focused on space is going to move faster than a chief of a service that's focused on, again, the entire multi-domain part of an air force.

So I got behind it. And once I became a believer, I got behind it full force. And my job, I believe, is to find the sweet spot between maintaining that integration of joint war fighting between air and space, but yet allowing this separate service to develop its own culture, because we could hug it too close and slow it down. And that's what General Raymond and I have been focused on. And my job is to make him and his new service successful within the Department of the Air Force. And so we're working together, hand in hand. It helps that we've sort of grown up together, known each other for years. I have great respect and admiration for my fellow chief. But because I'm a firm believer that this is the right way

to go, it's actually been easy to get behind it and make sure -- and so we've agreed that we may disagree, but we'll never be disagreeable. And our services know that there's no air between us and the typical bureaucratic battles that would occur between two services are just not going to occur to the level that we're going to allow them.

Final thing on this, so I have this picture that I love to show which has got me holding my two granddaughters, Ava and Rae, who just turned two. And they don't know this, but I've done the math, and they are members of the class of 2040 at the Air Force Academy. And they don't know this either, but one of them will join the Air Force and one of them will join the Space Force. And on that day when they walk across that stage to get their diplomas, the class of 2020 will be graded. And the question for us, us are all here today, members of the class of 2020, what did we build. Did we build two services forged on a foundation of trust, confidence, and focused on joint war fighting and moving space superiority and air superiority forward together? Or did we allow this to become a divisive split with the tensions and the distrust that occurs when there's a nasty divorce over the years. Shame on us if we let that happen. And I will tell you, Chief Raymond and I are not going to let that happen.

MR. ROSE: Thanks very much, General.

Mike, let me turn the floor back over to you. Thanks very much.

MR. O'HANLON: Thank you, Frank.

And, General, now a few questions that I'm going to try to condense because we have a dozen or more from the audience and we don't have time for all that. But a couple of people were curious, building on the issue of people and the state of airmen and airwomen in the Air Force, about efforts that you're making on the diversity front, picking up on my last question, but if there were a couple of specific things you could add about what you're trying to do to improve diversity. Or maybe even the more pointed way to say it is to improve the promotion prospects for your diverse population across many different genders and races because, of course, you have a pretty representative Air Force at younger levels I think relative to American society, but as people go up in the ranks, sometimes there's less.

And then another question was about pilots, and whether you have enough, whether you're competing with the airline industry. Maybe it's not going to be as hard to compete with the airline

industry now. Normally in an economic downturn it's a little easier for the military to recruit and retain. But I wondered if you could speak to those two questions about people please?

GENERAL GOLDFEIN: Absolutely. So, first, let's talk officer development and NCO development. I'll focus on officer development. So we are in the -- about complete to the largest overhaul of the officer development and promotion system in the history of the Air Force. Last time it was touched was about 1982. And so in the first year I went out and we did extensive surveys to the Force on areas and one of the areas we looked at was officer development and promotion. And what came back was not a lot of trust and, quite frankly, a lot of -- not a lot of understanding on what we value as an institution and how do we promoted based on what it is that we value. And so the foundation of our officer development and promotion system is based on four key core competencies of every officer. Number one, how do you perform the mission? Number two, how do you lead the people entrusted to your car? Number three, how do you manage the resources required to accomplish your mission. And, number four, in the rating period how well have you personally improved your unit. Those are the four core competencies of an airman, and officer in the United States Air Force. And I would say for an NCO as well.

And those four competencies ride on a foundation of impeccable character, because the nation expects us to be men and women of impeccable character because we ride for the brand. And not only do we ride for the brand, but we also will turn a key and launch a nuclear missile, and that requires a level of character at a very high level.

And so based on those four core competencies, we went and took a look at it and you can now thread back to those competencies in everything we've done. We took the one large single line of Air Force promotion and development category and split it into now six categories to allow us to tailor the development of an officer against what we truly value as an institution. And the previous process, everyone was competing against pilots. And so you had to do the same things the pilot did, regardless of whether that was what we value as a service. So, for instance, if you're a space officer, you would think that it would be obvious we would value a year with industry doing work with SpaceX or Orbital or someone. But there was no time for that in the previous system. So we busted up the development

categories. We got rid of below the zone promotions, which is, as you might imagine, a rather significant emotional change for the Air Force. But I found that we were one of the few institutions, as part of professional development, that the first time we identified someone who has high potential, we would remove time from their career for development. We would just advance them faster and faster and faster. And it set up some behaviors that, quite frankly, did not align with the four core competencies of what we're looking at.

So long way of saying we have completely overhauled our officer development and promotion system over the last two -three years. And I think it's going to produce that Force that we need that aligns with all domain operations that we talked about in the beginning. Because the technology is great, but you've got to have the people to be able to accomplish the mission.

When it comes to pilots, we've basically sort of been holding our own, quite frankly. Not significantly improved, not significantly degraded. We have about a 2,000 shortage. We've carried that shortage over the past couple of years. We rarely talk about the denominator -- that's 2,000 of 25,000, just to put it in perspective, that we're short. So we just continue to manage it.

We are seeing that the airlines are not hiring, and so we have greater retention. But to me it's about -- this is about equality of service. We've got to make sure that we -- and we are doing a lot to make flying in the United States Air Force as rich an experience as we can make it. And if we can make it rich for that airman and that airman's family -- and this is more than pilots, this is air battle managers, this is our air crew -- if we can make flying in the United States Air Force as rich an experience as we can for all the reasons that someone signed up to join the United States Air Force, we're going to keep that longer.

And then you asked about what I call, you know, being able to manage your career through what I call full-time/part-time. So I'm full-time, I come on active duty, I decide I want to take some time off. I've got a sick parent, I've got something in my life that's going on, I want to raise a family, right. Can I go part-time? The answer is yes. What's not as easy as when life changes and you want to come back to full-time, that's actually a harder thing to do. And so what we're working through permeability, and congress is helping us with the laws on this, is to allow an officer and NCO, but primarily an officer, to

go through a career, go from full-time to part-time and come back to full-time. To do it and remain competitive, you've got to change your year group, because if you stay with your original year group, you're no longer competitive. And we've got to be able to make that change through components far easier than it is today. And so we're working on legislation to allow that to happen.

MR. O'HANLON: Fantastic. Thank you.

There are a few questions that pick up on a conversation you and I were having earlier about the relative priorities of different things and your comment, you need more highway and you've got plenty of trucks, which then leads some people to ask well, if you need to persuade congress to cut a couple of specific programs, are there any candidates, things that you would welcome keeping, but maybe don't have the money for, above and beyond the A-10 debate -- although you can talk about that too. But any kind of legacy systems, anything specific that would be a good place to pick up the conversation about priorities.

GENERAL GOLDFEIN: Well, you've got to start with the -- just sort of take a look at where we are as an Air Force. So when I went to war as a captain in Desert Storm, we were an Air Force of just shy of a million, air, active guard reserve, and civilian airmen -- just shy of a million. And we had about 8,500 aircraft in the inventory. Today, we have about 690,000, down from just shy of a million airmen, and we have just over 5,000 aircraft, down from 8,500. So 300,000 and 3,000 aircraft, just to round the numbers, have left the Air Force.

So, we're not the Air Force of Desert Storm. So when you start talking about, okay, well then what of those remaining 5,000 would you give up? Now you perhaps understand why I'm not looking at killing an entire weapons system, but I am looking at aggressively fleet managing. And the way you do fleet management is you identify in each weapons system those tail numbers that are the oldest and the most expensive to keep flying, and you retire those. You flow that money back into the remaining aircraft net weapons system, to the modernization to keep them flying longer. And then you take what's left over and you buy the highway that that weapons system has to ride on.

And so that's been the strategy through '21, you'll see that again in '22. That's why you see some number of A-10s -- fleet managing. There's some number of tails that are cost prohibitive to re-

wing, and so we're going to keep the A-10 flying through the late 30s -- maybe even to 2040. I just don't want to fly all of them. So I want to retire some number, I want to manage that fleet. I want to retire 17 B-1s. I'm not retiring the entire B-1 fleet, but I've got 17 that are cost prohibitive. I'm going to manage them by tail number, I'm going to put them in the bone yard. I have some number of old RQ-4s that I want to do the same thing with. I've got some number of C-130Hs, right. So this is aggressive fleet management.

On weapons systems that don't play as heavily in the 2030 fight as other weapons system, and then of course what we can't talk about is that it's not all minus, but I can't talk in open about many of the pluses because we're buying a lot of classified capability that is going to drive the Chinese and Russians crazy, that we will reveal in a time and place of our choosing.

MR. O'HANLON: There were a few questions about specific modernization programs and I'm just going to summarize and talk about three.

Whether you have anything to say as you're leaving this job and have worked through the F-25 program, the centerpiece of Air Force tactical modernization, whether you have any comments on that program. There was a sort of critical question about the state of the KC-46 tanker, which the person who asked the questions had some concerns about quality control. And then, finally, the B-21, that process was selected on your watch and is now still in a fairly early phase, but since that's such a central platform a long range stealth capability, I wondered if you had any comments on the state of that program, please?

GENERAL GOLDFEIN: Yeah, thanks, Mike.

So, F-35. I was very concerned a few years ago about the cost of sustainment. And my sense was that we had not built the infrastructure to scale to the size of the buy when it came to parts flow and flying hour costs. And was pretty blunt and specific to all the CEOs in a letter I sent to them. I was told that they called it the email heard round the world. When I sent an email to all the CEOs and to the joint program officer and I said, look, I'm going to get a pretty specific question on the Hill. And I have, between now and when I appear, to figure out an answer to this question. And the question is, Chief, why should we buy you more F-35s when you can't afford to sustain the ones you can't afford to

sustain the ones you have. And I need an answer to that question

And so we laid out some specific avenues that we have to go down to be able to drive the sustainment cost down to the high end of a fourth generation. And it's not just about the Air Force, this is mean as a Joint Chief speaking on behalf of my Marine and Navy counterparts and as an international air chief speaking on behalf of my international teammates who are in the F-35 or those who want to get into the F-35.

And so I'm happy to say that industry took that letter seriously as to the joint program office. And I've seen a rather significant change in behavior that I wasn't seeing, quite frankly, a few years back. And I've now twice taken 27 stars to the Lockheed Martin headquarters to do a full day review of where we're going on just sustainment. And I'm actually very, very happy with the turn that they've made.

And I say that because I've always been happy with how the aircraft is performing operationally. It's doing really well. I mean the best example I can give you is really counterpart Amikam Norkin, who called me after he was flying it in Israel, and he said, Dave, he goes, I'm no longer integrating the F-35 into my Air Force, I'm integrating my Air Force into the F-35. That's the nature of fusion, which in the end is what defines fifth generation.

On the KC-46, I've flown it twice. Like everyone, I was very, very, very frustrated with where we're headed. Three days after new CEO Dave Calhoun got in place I wrote him a letter. He came to see me. We had a very frank conversation and I asked him for a couple of things. I said, listen, I'm not seeing the resources being placed against this program that need to be placed. I'm no longer interested in half measures when it comes to remote visual system. And, quite frankly, I'm not seeing the talent from the company on this program that I should be seeing. And he committed to me in the office that he would fix, and he has been a man of his word.

And so we reached what I believe is a really good compromise solution on an engineering design that is going to turn that remote visual system into exactly what it should have been all along. I'm not happy with the fact it will take us a couple of more years to do it, but I understand why that's required. And so we're on a path right now on the KC-46 that is very similar to the early days of the

C-17. Anybody who is listening who was part of the C-17 program in the beginning, it was a mess. I mean it was a Nunn-McCurdy poster child. And we almost lost that program a number of times. But nobody remembers that. Right now we look at the C-17, everybody flies it, it's unbelievable, it's probably one of the most important weapons systems we've ever fielded, and it's just a spectacular -- it is the heartbeat of global mobility. But nobody remembers those early days. The KC-46, I'm convinced, will be a weapons system that we're all proud of. I've flown it twice. It's going to be a significant part of the network that we've been talking about this entire hour. And so I'm far more confident today in the performance and the behavior of Boeing on the KC-46 that I have been in my entire time here. And I give the new CEO a lot of credit for being a man of his word.

And on the B-21, I just went out a couple of weeks ago and took a look at it. I'm actually taking the deputy secretary and the vice chairman out next week and we're going to go take a look at of it. Of all the programs that we have now in the United States Air Force, I will tell you that if you were to ask me to wrack and stack them, I'd put B-21 at the very top in terms of contractor performance, in terms of the culture of what I see when I go visit, and being able to deliver on the performance parameters that we have put in place. I'm really very happy with the way the B-21 is going right now.

MR. O'HANLON: General, we're very grateful. There are a few more questions, but I want to respect your time. We've had a great hour with you; we've had a great four years lucky to have you running the Air Force. And, again, many more years before that with various kinds of service to your nation. So thank you on behalf of all of Brookings and the whole country. Good luck to you. And I hope you get a little bit of a break after August 6 before you embark on the next chapter of life.

But, speaking for Frank and myself, and General Allen, our President, and everybody else, best wishes and thank you again.

MR. ROSE: Thank you very much, General.

GENERAL GOLDFEIN: Thanks, Frank, and thanks to Lori and everybody out there. Thanks to all of you for what you do and for supporting airmen and families.

MR. O'HANLON: Okay, signing off everyone. Happy Fourth of July.

GENERAL GOLDFEIN: You too.

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