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"Challenges to Nuclear Deterrence"

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General Chilton: Thank you, Jim. Don't worry, I'm still introduced on occasion in Omaha as the Commander of SAC, and SAC went away in 1991 but you know, I don't take umbrage at that, in fact I think that's a compliment.

It's great to be here with you here today. Special thanks to the Air Force Association for inviting me back. I always appreciate the opportunity to come to this forum to talk a little bit about U.S. Strategic Command and today's particular topic which I think is one of interest to all of us today and certainly will be one that is of interest to all of us in the future.

Today I've been asked to address the topic of challenges to nuclear deterrence. It's a pretty sobering topic when you stop to think about it. I notice that I've been scheduled to deliver these remarks right before Happy Hour. It seems like a bit of an oxymoron as we go forward, but if nothing else it tells me that the agenda writers certainly have a sense of humor.

Before I address the challenges, and I've chronicled a few. I don't suspect they're the total challenges, but before I get into the ones that I've come up with to address I think it's probably a good idea to first review the basic principles of strategic deterrence.

As I go through this I'll readily admit I've plagiarized quite a bit of this from some great thinkers, not the least of which is General Larry Welch who has done a lot of talking on this particular subject and paid a lot of attention to it over the last decade and a half when others perhaps weren't paying quite as close attention, so I compliment him and steal from him liberally.

The purpose of a deterrence force is to create a set of conditions that would cause an adversary to conclude that the cost of any particular act against the United States of America or her allies is far higher, far far higher than the potential benefit of that act.

Let me read that again because it sounds so simple. The purpose of the force is to create a set of conditions that would cause any potential adversary to conclude that the cost of a particular act against the United States or one of her allies is far higher than the potential benefit from that act.

Since we ask a potential adversary to draw a conclusion as they examine our forces, clearly deterrence is focused on the mind of the adversary. Indeed, it's ultimately focused on the decision-maker. In addition, in the area of strategic nuclear deterrence, the deterrence not only weighs on the mind of the potential adversary, but also on the minds of the leaders of our allies who depend on the U.S. nuclear umbrella, and just as importantly, the deterrent weighs on the minds of U.S. leadership as well. Any doubt in the deterrent by an ally who is dependent upon that deterrence could incentivize them to develop their own weapons. We would call this proliferation. Should that proliferation ever happen, I think we would see proliferation on a scale that we can only imagine today. Or should they lose confidence in that deterrent, they could decide to no longer be aligned with U.S. national interests, and that certainly would not be to our benefit.

Further, any doubt in the deterrent by our own leadership could lead to circumstances where the U.S. could be coerced into taking actions not in concert with our own best interests.

And of course doubt in the deterrent by a potential adversary could lead to catastrophic miscalculation.

History bears out that the lack of doubt in the minds of the Soviets, our NATO allies, and our own U.S. leadership effectively accomplished what the nuclear deterrent was meant for in the Cold War. That was not just to deter a nuclear exchange between the two major super powers but also, and just as importantly, to deter a conventional aggression by the Soviet and Warsaw Pact against the Western Alliance. That fact is often forgotten.

We should be grateful certainly as airmen for those who were so clear in their understanding of the strategy and steadfast in their duty throughout the entire period of the Cold War. We owe them great thanks.

As I consider today's challenges to nuclear deterrence, I'll break them into two categories. First is those that we cannot directly control; and the second set are those that we can. Let me begin by discussing those that we cannot directly control.

When I talk about these, this is not to imply that we should not concern ourselves with things we cannot directly control. For most certainly we or other elements of our government, can shape and influence that. But we must also recognize our limitations to do so.

First and foremost, we cannot directly control the geopolitical environment in which we operate. It has changed since the Cold War, clearly. I guess saying it in the vernacular, the reason we can't is because the other guy gets a vote. The other guy being other nations around the world.

The number of actors today with a nuclear capability has most certainly changed since the start of the Cold War, and that has changed the geopolitical [inaudible] significantly.

During the Cold War changes in Soviet leadership were a significant challenge to the United States' strategy in deterrence. Changing decision-makers imposed a changing dynamic to the deterrence equation. There was a difference between Khrushchev and Brezhnev and Stalin and you can go down the list. That change in decision-makers, and remember what deterrence is focused on -- it's focused on what they will conclude about our forces, cost and benefits -- is clearly important.

Consequently during the Cold War we spent a tremendous amount of effort attempting to discern any change in the values or fears of the Soviet leadership as it changed. All the while never assuming to know the answer so precisely that we didn't hedge our strategy.

Today in dealing with multiple nations with nuclear capabilities we find ourselves faced with multiple decision-makers that may each have very different fears and very different values. This, of course, complicates the cost/benefit calculus in each individual equation and compounds the complexity of our own decision-making. Therefore, it is just as imperative today to study these differences and to study these potential adversaries as it was to study the single adversary we faced during the Cold War.

Add to that today there are cases of unequal states in the game. During the Cold War the U.S. and the Soviets had similar stakes in the game -- national survival. That and the fact that we both valued that national survival brought some balance to the deterrent equation. Today there are may be some actors, and there certainly are, who are more willing to use nuclear weapons in a given circumstance given the imbalance of what is at stake when they consider conflict with the United States of America.

We may not be facing a regime's survival decision. They may be. And in that context they may be more willing to use a nuclear weapon in a conflict with the United States.

So in the current geopolitical environment when we ask ourselves whom do we want to deter, what do we want to deter them from doing, and under what circumstances do we want to conduct deterrence, the answers can be far more complicated than those we had to address during the Cold War. So these realities challenge those of us in the deterrence business. And oh by the way, that would be all of you. Because if you're in the United States Air Force, you're in the deterrence business.

The challenge is to do several things. First, I think we must conduct more analysis of our potential adversaries to determine as best we can their calculus of their decision-making process. What is it that they value? What is it that they fear? How do they behave in Phase 0? How do they behave in Phase 2 as a crisis arises? What does that mean for us with regard to how we posture a position, conduct diplomatic exchanges, et cetera, our deterrent forces?

Secondly, we must develop strategies that will achieve the desired deterrent effect, and we must develop these strategies with some sense of humility and knowing that we cannot accurately and completely predict how a particular adversary will react. We must study and do our best to understand, but on the other hand we must hedge with humility at our ability to completely understand.

Third, we need to recommend fielding and appropriate posturing of strategic forces to support those strategies, with the realization that the signals we send or that we intend to send to one particular nation may be interpreted in a most unhelpful fashion by a third nation who also has nuclear weapons.

Finally, we must conduct close consultation with all of our allies to better understand their views on the assurance aspect of our extended deterrence role on this day where there are multiple actors with nuclear capability.

Let me shift to the challenges that are within our control. I would like to address two.

First, when it comes to discussions on the nuclear deterrent there always seems to be, well, there always seems to arise, I should say, this temptation to develop a numbers-led strategy as opposed to what I believe is the correct way to address the topic, which is just the opposite. Numbers should follow strategy. Strategy should not be built around numbers.

When contemplating the appropriate size and posture of the nuclear deterrent force, whether contemplating reductions or even growth, one should never begin with numbers. Rather, we should always begin with a clear-eyed examination of the geopolitical reality of the day and even more importantly, the geopolitical uncertainty of the future. From this should flow a strategy to address our deterrent needs, and this strategy, with appropriate hedges for our documented inability to precisely predict the future, should drive the size and the posture of our forces and the size of our nuclear stockpile. The latter approach, that is the correct approach, an assessment then strategy-driven approach is what STRATCOM advocated for and was adopted by the department in both the development of the Nuclear Posture Review and in the support we provided for the Strategic Arms Reduction Treaty negotiations. That's the good news.

But you can bet that in the future the temptation to take the alternative approach, whether that be for political or financial or ideological expedience, should be rejected. This is something we can control and we must be on the alert for as we move forward.

The second great challenge to our nuclear deterrent that is within our control to address is quite simply neglect. Whether benign or purposeful, neglect can result in serious and often insidious effects to the nuclear deterrent of the United States of America.

Now significant steps have been taken by the department to reverse a 15-plus year trend of benign neglect, from organizational adjustments to include the standup of Air Force Global Strike Command, which I think is having palpable and positive effects in changing the way we address our nuclear deterrent; to increased investments in our equipment and in our training. But there's much more work yet to be done.

Fundamentally there are two things required to support our nuclear deterrent -- capability and will. Will is provided by our elected leaders. WE provide the capability. Our job is to define the required capabilities that are needed, field them, operate them in a fashion that will absolutely leave zero doubt, I repeat, zero doubt in any potential adversary's minds of our readiness and our ability to execute the orders we might receive from the President of the United States.

So what are the elements of this capability that we must provide to the deterrent? I think there are four things that we need to do to effectively deter.

The first element is we must be able to warn the President and our forces of an impending or actual attack on the United States of America. And we must be able to answer the first and most obvious questions. Who is attacking us? What are they attacking us with? What are they targeting?

Today we answer these questions with a combination of DSP satellites and geosynchronous orbits and highly elliptical orbits that provide the answer to the first two questions, and ground-based radars that confirm those two and answer the third.

Now in 2008, give the delays in the SBIRS program which is designed to replace today's DSP constellation, I raised concern I believe at this podium over the sustainment of the on-orbit capability. That was in the fall of 2008. I was told not to worry, it would launch in the fall of 2009.

The fall of 2009 I raised the same concerns and pointed out that we were quickly approaching a point where we required 100 percent launch success of our first two satellites in order to sustain the capability and meet the requirements of the United States Strategic Command to provide this element of the strategic deterrent.

We did nothing. I was told that we would launch in the fall of 2010.

It's now the fall of 2010 and SBIRS GEO-1 is not scheduled to launch before next summer. In sum, it has slipped two and a half years in two years.

I spoke of 100 percent launch success in the past. It is no less true that we need that today. And although we are very good, and in fact the ELD has not failed us yet, I know from past experience as humans when it comes to the business of launch, being perfect is a challenge. It is past time to mitigate the risk to our deterrent posture in this first critical element of missile warning and attribution. It's not only essential to our strategic deterrence, it's essential theater missile warning and ballistic missile defense of both the United States and our troops forward.

The second essential element of our capability is assured and survivable nuclear command and control. Today we do this effectively through redundant satellite, airborne, and ground-based communication networks, and though effective today investments clearly need to be made to sustain that assured link

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between the President of the United States and his advisors and the force in the future.

Of all the things that we do in the nuclear deterrent business, this is probably the least sexy of them all, but it is as fundamental as our missile warning capability and the other capabilities I will talk about in the future, to plant that seed of absolute certainty in the minds of a potential adversary, that knowledge that we will be able to most assuredly respond to any attack they would launch against this country.

The third element that of course is essential. Now it starts getting easier to guess these, are our delivery vehicles. Our Minuteman III ICBMs, land-based strategic deterrent; our submarines, our submarine-launched missiles, the Trident D5; and our bombers with their gravity and nuclear cruise missile capabilities.

NPR validated the need for the nuclear triad today, so with that validated need I think it's appropriate that we move forward and continue, since it's in our control, to advocate for and make the appropriate investments in sustaining these capabilities, these delivery platforms. Congress has directed that the Minuteman III be sustained through 2030. Tremendous steps have been taken by the Air Force to improve that particular weapon system to include the safety enhanced reentry vehicle, the propulsion replacement program, the guidance replacement program. A great amount of work has been done also to effect and increase safety and security for operations of this system.

But there is more that needs to be done. I take good counsel and comfort in knowing that the Air Force is making investments in this particular area to address some of these odds and ends, if you will, that turn out to be pretty essential and important for the sustainment of the force, whether they be tool sets and test equipment and wires and cables that are required in the weapon storage areas, to allow our troops to be able to deliver the capability they know how to deliver, on time, when this combatant commander needs them, and not be frustrated by aging and failing equipment.

It's also time for us to step out and start studying what will be the replacement to the land-based deterrent. Actually there are two questions to ask. Should there be a replacement post 2030? And two, if so, what should it look like?

Now you might say 2030. Golly, that's a long time away. Why would we start studying it now?

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If the decision is that we're going to replace it, we should probably start replacing the missiles in about the 2025 time period. That's 15 years from now. Now let's examine our normal acquisition time cycle. Probably 10 years, and that would be maybe optimistic. Maybe 12. Now let's study how long it takes us to complete an AOA, and oh by the way, the redo of that homework assignment that we're usually given. It's time to start thinking about this. It's time to start writing about it and examining it and putting some options on the table.

And by the way, there's a whole corpus of work that was done back in the 1990s on this that we got to leverage and take forward as we consider the future of the land-based deterrent.

For our submarines, the Navy is starting to move out with the design and development. They tried to follow on to the Ohio Class submarines, the Trident replacement. And also to sustain the Trident D5 missile. They don't plan to field the first submarine until 2027, and already they are off in the preliminary design phases and making the hard choices on trades on the number of tubes, speed, size of the vessel that will be required in the post 2030, 2040, 2050, 2060, 2070 time period to provide the deterrent for the United States of America and the assured response fashion and survivable fashion that our submarine force does.

There's a common piece though here that I think we need to keep our eye on. The D5 and the solid rocket motor of the Minuteman III.

Solid rocket motors sound pretty easy. No pumps, not a lot of moving parts except the nozzle. But in fact solid rocket motor technology, if it was so easy we would see a lot of countries around the world building large solid rocket motors. We don't, because it is difficult. And as we look to the future, as we look to what might follow the Minuteman III, and certainly someday what might follow the Trident D5, I think we need to consider carefully how we sustain the technology, know-how and industrial base of the large solid rocket motor capability that we possess in this country, almost uniquely that give us a critical edge, both in our deterrent and our access to space.

The third, of course, element of the triad, the bombers and the gravity weapons and cruise missiles which they carry. The bombers are the most flexible element of the leg. We talk about that quite often. But we often forget that bombers can also be an incredibly survivable leg of the triad should we elect to put

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them on alert. And in that sense they provide a tremendous backup to the submarine force which with a single broad technical failure can find itself in port, hopefully not; or a technical failure to the Trident D5 system that might render all of its fleet of missiles unable to perform their duty; or technical problems with the warheads that might be on top of those missiles.

In fact, the bombers and their cruise missiles are an essential part of our hedging strategy when we hedge against technical failure, but in the submarine force and the Minuteman force, and as we hedge against geopolitical change which certainly is possible as we look to an uncertain future. That point is often forgotten. It's one that airmen should remind others of frequently.

The cruise missile is a cost-imposing weapon. That means if it costs you \$10 to field a cruise missile it costs the adversary \$100 to try to defend against it, and in fact they can't. It just doesn't scale.

Twenty cruise missiles coming off a B-52 are not easy to defend against as they cruise in at low altitude against different target sets. So there's a tremendous level of assurance that should they ever be called on they will do their mission and that is the essence of deterrence.

Our last but not least essential element are the nuclear weapons themselves. In this area a lot of investment is required, and this is an area again that we can control. Investment in the infrastructure at Los Alamos and Oak Ridge National Laboratories. Someone once said, and I believe it's completely accurate, if you're going to have a nuclear weapons program you must have a first-class plutonium and a first-class uranium facility to do that. That's just absolutely fundamental. There are other pieces you need to have as well, but you need at least that.

You would be appalled if you visited Oak Ridge, Tennessee and saw our uranium facility which was built during the Manhattan Project. That's how old it is.

I'm a student of General Wilbur Creech. He said if you really want people to perform and do their job right, take care of them in their workplace. You give them quality spaces to work and do their work. And when you think about the work we require people to do on elements of nuclear weapons, of course you would immediately think if you were an airman that they are working in

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very pristine and state of the art facilities. They are not. And our country needs to fix that problem and make the appropriate investments in both those facilities.

Life extension programs for our weapons that were designed to be replaced but we have decided to retain are absolutely essential to sustaining the deterrent for the United States of America.

On top of that, we have a great opportunity to not only extend the life of our weapons, which is technically feasible, but also to add increased safety, security and reliability or effectiveness into those weapons for the future generations who will depend on them for the deterrence and survival of the United States and an uncertain future.

Finally, recruitment and retention of our nuclear expertise. It's the same kind of problem that I worry about a little bit in the solid rocket motor business. If you let the expertise and the knowledge go away and all that's left are the books that they wrote, when you go back and look at those books you'll find out they weren't written very well. Because a lot of what they did was in their head. They passed that on and they passed that legacy and knowledge and know-how on to the next generation who, by the way, in this domain will not be allowed to do testing, I precise, through their interaction and recruitment and retention of the skill sets that are required to provide the deterrent of the future. This is something else we can do something about. We can do it by providing them quality places to work and giving them challenging work to accomplish in those places.

If all we do is hire people -- Imagine this. You're an aeronautical engineer. Here are the job opportunities for you in the future. When you graduate, we will hire you to come and watch our Air Force airplanes rust. We're not going to let you do any design work. We're not going to let you build new airplanes. We're not going to let you increase their safety or enhance their security or increase the mission effectiveness. We just want you to watch, and every now and then let me know if you think they'll still fly. How many would want to be aeronautical engineers? Zero.

It's the same in the nuclear weapons business. We not only need to provide future scientists and engineers with great places to work and do research, we need to give them meaningful work to do while they're there.

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There's a lot of good news here, folks. I don't want to sound like it's all gloom and doom.

First of all, if we take a look at the Nuclear Posture Review, I think that was a tremendously good-news story. It reaffirmed the need for the deterrent. It reaffirmed the need for a nuclear triad. The NPR also committed us to a stockpile management program that will be essential to the sustainment of the weapons we need to provide the deterrent today and in the future for generations to come.

It calls for improvements in safety, security and effectiveness, and it takes no options off the table for consideration by future engineers and scientists in providing what this country needs for future nuclear weapons in our inventory.

New START. The new START was negotiated from a strategy-based approach. I know that because we were part of the team that did it. Our current strategy and assessment of today's geopolitical world were foundational to the numbers negotiated in the START treaty. But just as importantly, the preservation of our ability to hedge against technical failure or dramatic geopolitical change was also retained. I might note, again, the key to that hedge, the ultimate key to that hedge is today's B-52 force with its cruise missile capability.

This year's President's budget was a good news story for the nuclear deterrent business. It plussed up the Department of Energy's budget to put us back on a path -- It actually put us on a path to fix some of our infrastructure problems at Los Alamos and at Oak Ridge, Tennessee, and it kick-started Congress' Stockpile Management Plan which is a congressional initiative, and the President funded it and so there's a marriage here that gives us hope that going forward we'll be able to achieve some of the visions we have for sustainment of the stockpile.

The Congress approved study funding to study the life extension options for the nuclear and non-nuclear components of the B-61 bomb which holds the promise in this process of implementing for the first time the vision that the scientists have for enhancing safety, for enhancing security and improving the reliability of this particular weapon. This will be our first opportunity to get it right. The administration's behind it, the Congress is behind it, and this is a good news story as we start to go forward and look at the future of the stockpile. It's not only good news for us, the B-61 modernization, I should say sustainment, life extension, is good news for our allies

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because we not only depend on this weapon for an element of the strategic deterrent on the B-2, but our allies depend on it as part of the nuclear umbrella.

This is accomplished all the while with the possibility, and this is the win/win, if we do this correctly, if we achieve what is envisioned by the scientists, we can actually reduce the number of variants in the B-61 and reduce the total inventory of nuclear weapons in our stockpile.

So in summary, when I reflect on the question on the challenges to our nuclear deterrence, I see some that we are less able to control, but nonetheless, require action on our part; and others that we can absolutely control and advocate for and likewise, require action.

Though much has been done over the past three years to address these challenges, there is much more work to be done, and that's not a bad thing particularly when I consider the folks who will be charged to address these challenges in the future.

The great airmen of our storied Air Force history never shied away from the most difficult or challenging circumstances. In short, those we read about in the history books never failed to do their duty and I have every confidence in today's generation of airmen, that they will rise to the challenges that I've listed and they will be successful in assuring the effectiveness of the nuclear deterrent of the United States of America for generations to come. Because above all else, the greatest service we provide when we wear this uniform is not winning our nation's wars, but preventing them from ever happening.

God bless you all, and thank you very much for this opportunity to address you on this subject.

[Applause].

Moderator: The first question. You testified earlier this summer that the U.S. is in a good position even if the Russians treated on the START treaty. In an unclassified environment, can you elaborate at all on that?

General Chilton: There are a couple of points to be made.

The first question is, does it matter if the Russians cheat? The answer is of course it matters, and I would hope it matters to the Russians. When you consider a treaty as important as this

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one, and when you put ink on it to say that you're going to abide by it, if you don't abide by that treaty the implications in the international community of your word and the desire of other people in the world to do business with you, I can only imagine would be greatly diminished.

But my job is to look at it through the lens of military significant cheating. My assessment is that the Russians would be, should they decide to cheat, unable to cheat in a militarily significant fashion.

There are a couple of reasons for that. One is the verification element to the treaty, which I believe if they were to attempt to do so in a significant fashion, they would be found out.

The second area is also -- It's hard for me to imagine that they could ever cheat to a point at which they would get to that point in the deterrence decision calculus to believe that the least worst choice they could make in a crisis would be to attack the United States with nuclear weapons because of the assured response capability of our deterrent. Of our ICBM force which they cannot know we would not launch under attack; and because of our missile forces that are deployed daily. With those we have a devastating and assured response that will continue to exist.

Moderator: There was a question about the aging retiring nuclear workforce, but I think you answered that fairly well in your comments. I'm going to skip that one.

A couple of questions about CYBERCOM. The Barry Hadley report on the QDR suggested that NSA or perhaps really CYBERCOM take over the mission of defending the U.S. from cyber attacks. Can you comment on that?

General Chilton: The mission for defending the critical infrastructure of the United States belongs to the Department of Homeland Security. What we need to be prepared to do in the United States Strategic Command and the defense support to civil authorities, be prepared to support them should we be called upon. We consider that an important part of our mission set, to not only operate, defend the military networks; be prepared to attack and when directed attack in support of military war plans; but if called upon by some other element of the government, to be able to provide our expertise to assist them.

Moderator: The final question, the last time you spoke here at AFA you mentioned that the U.S. was the only major nuclear

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power which did not have the capacity to produce more than a handful of weapons per year. You did talk about that topic. Is there anything you can add to that? The comments that you made last year, has that changed at all or are we in the same position we were?

General Chilton: That's accurate today. There are other great nuclear powers that have the ability to produce a large number of new, and they are producing new nuclear weapons, unlike us, who are constrained to, and I don't think I have a problem with this at all, constrained to sustaining our current stockpile through life extension programs.

What's important is that we be allowed to sustain that stockpile and add the appropriate safety and security and effectiveness features that the President of the United States calls for, and I think we're on the path to do that as I described with the Stockpile Management Program and the great support we're getting from the administration to move forward in these areas.

Moderator: General Chilton, thank you very much.

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