Air Dominance: The Essential Requirement

Dr. Richard Hallion

16 September 2008

Dr. Hallion: Well it's a real pleasure to be back with the AFA again. And especially to be speaking to you on the issue of air dominance.

If we take a look at the way people tend to regard wars, we always tend to get caught up in the war *de jour*, so to speak, and one of the things that we have had repeatedly over and over again in military aviation history, which has been very disturbing, I think, is the idea that somehow we're beyond the point where we need to worry about air superiority. We almost take it for granted that when American forces engage in warfare that we will have air superiority as a given condition.

And so I thought I'd throw together a little presentation for you today that takes a look at air dominance; what it is, what it gives to us, and what some of the prospects of it are and also some of the lessons that we've learned from it, lessons both positively and negatively.

Now we're fortunate to have with us today a person who can speak with very great expertise on the subject of air dominance, and that's General Johnny Alison, one of the original Flying Tigers. General Alison, would you like to stand up and show yourself to the gang?

[Applause].

Dr. Hallion: General Alison played a leading role in making the United States Air Force and in making the United States Air Force what the United States Air Force what it is. So Sir, we salute you very much for your efforts, and I'm honored that you're here today.

Now if we take a look at the last century, you know, which was the first century of winged flight, it was also, of course, a century of profound conflict. It was a century in which warfare really became three dimensional. You had attacks from above the surface, attacks from below the surface of the sea, and those three-dimensional attackers really changed and transformed the way in which we undertook war.

If we take a look at these conflicts, and this is just a small list of them - there's many others that we could certainly include here – we find that one of the enduring aspects of it was that control of the air was absolutely crucial in those conflicts. It was the one requisite quality that was fought for

very, very hard and persistently throughout the length of those conflicts.

Control of the air. What does it really give to us? What's really important about it? I think if we take a look at the first bullet here, I think it kind of summarizes overall what it is. Control of the air enables you to protect your own forces while you're able to strike at a distance against the foe.

You know, if we think about military affairs, really it boils down to the idea that you have height and you have reach and then you have the speed of engagement against a foe. Height gives you view. View gives you awareness. Awareness gives you the ability to undertake some sort of informed action. The reach enables you to fulfill some purpose at a distance that enables you to hold the foe hostage at a distance.

And you know the way I look at that is, if you think about military history, David didn't grapple with Goliath; he didn't go for the close fight; he hit him with an aerospace weapon. He hit him with a rock.

And if you take a look at the English archers at Crécy, they didn't let themselves be ridden down by the French cavalry. They hit them at a distance with an aerospace weapon. And of course the speed, which is really innate - it's one of the primary qualities of air power projection – the speed, of course completes that trio of values.

What control of the air enables you to do then, is it enables the commander of a force to execute as he wishes to execute – as he and she wish to execute their campaign plan – it gives you that tremendous operational freedom to pursue the objectives as you wish to project them, not as you're forced to live with, not as you're constrained to live with by other external events. And it also gives you an inherently dominant maneuver.

You know, if we heard all sorts of baffles about the role of maneuver in Washington and things like this. Air power, however it is projected - by whatever service projects it - air power is inherently a maneuver force. It is the single-most important function that an air force can fulfill.

All services may have an air component to them, and all services tend to use their air component wisely within the constructs of the service culture and what the service objectives are, but air forces are full-service air power providers. And the first and most important service that they have to fulfill is control of the air. It basically, as I mentioned earlier, enables all other forms of attack.

You know, let's just put some historical figures on this. If we take a look at the Second World War, and we take a look, at the sinking of the Japanese Merchant and Naval fleet, we find that 48 percent of Japanese ships were sunk by submarine, a three-dimensional attacker; 45 percent were sunk by airplanes, a three-dimensional attacker. So you had seen an overturning in just a few short years of a paradigm of naval warfare that went back thousands of years.

If we take a look at land warfare in Europe in 1939-1945, by 1943 Dr. Siegfried Handloser, - who was the Lieutenant General in the German Army in charge of all German medical services - found a - really, to him – a remarkable fact, and that is the greatest cause of German combat casualties, casualties incurred at the front – not within Germany but at the front – was allied air attack. Second was artillery, and a very distant third was everything else.

When you think how broadly fighting German forces were around the European theatre at that time and in Russia, that gives you an idea of how significant air attack was. Once again, we were seeing this overturning of the two-dimensional warfare paradigm.

It is critical, if we are to engage as a joint force power projection force in this nation, that we have air dominance. It is the oil, the enabler, the life blood, you might say, of effects-based warfare. And yes, indeed, folks, effects-based is not a nasty word; it is a word that we need to take to heart.

And finally, most importantly, it's not a guaranteed right. It's like freedom itself. It can be lost within a generation, and I will give you a little example of that.

If we take a look at air dominance and how it fits within the air warfare spectrum, there is really three major cases that we can see of air power. You're either in control of the air, you're grappling for it, or you're on the receiving end of it, basically. And I've just thrown a couple of historical examples out here, together with the cases that fall out under air subordination, air parity, and air domination, and have tried to show with this slide the good-to-best and the bad-to-worst side. Notice that parity is not a good thing to be at. Parity is attritional warfare.

The example I used there, the Russian front in 1943, is because at any particular point in time the front was so broad and the forces were so diffuse that the Germans and the Russians, wherever they chose to exert air power and use it to maximum effect, either one of them could achieve local air superiority.

Now where both were putting forth the maximum effort, that was not the case. But basically, they were trading air superiority back and forth and so they were basically at a parity-type situation. Of course, late in 1943 it shifted very decisively to the Russians from that point on.

Let's stop with a little factoid, and that is we invented the airplane in 1903, and by 1909 we had lost control of the aerospace revolution and, in fact, it was starting to head decisively in the other direction. In fact, the leading aeronautical country at that time was France.

It's kind of interesting, it'll be 100 years ago tomorrow that poor Thomas Selfridge was killed at Fort Myer in the crash of the first U.S. military airplane, the Wright 1908 flyer. So keep Tom in mind, come tomorrow.

But in any case, if we take a look we can see, I think, what this comparison of two 1912 aircraft - just how great the performance disparity was. The end result was that the lead in aeronautics shifted to France. Not that it was appreciated by the French military.

This is Ferdinand Foch, who was one of the most creative and gifted military thinkers of his day. And when he was asked at an air meet in Reims what he thought about the prospects of aviation for the military, he said that, as I put here, "Aviation has zero value for the Army."

Now Foch was not a stupid man. And by the middle of World War I, when he had seen what it could do, to put it in modern terms, in ISR, and when he had seen that the ISR assets were vulnerable to enemy air attack, he came up with a very different way of looking at things. He recognized that "Superiority in aviation was critical to success of the ground battle." And that last quote, I think, is absolutely essential. Victory in the air is the preliminary to victory on land. Foch hit it right, and it has been that way ever since.

Now France led the aeronautical revolution, so much so that in World War I we flew their airplanes. You know, this is one of the classic photos of Eddie Rickenbacker, our first great World War I flying ace, who was [inaudible] 13 and John Pershing, who was the theatre commander for the United States, in his final after-action report that he submitted to the Congress put this little quote, which in its own way is rather damning. It took us the better part of 20 years to recover our lead in aeronautics after the First World War. But in that time, France got very complacent. Surprisingly complacent. And so you saw a steady decline in French aviation. So much so, that in 1928 the head of the French Finance Committee for the Chamber of Deputies

submitted a report in which he said French aviation is quite ill, *bien malade* was how he put it.

That decline continued over the 1930s and finally, in 1940, of course, there came a cropper when they were victimized by the Wehrmacht. This aircraft you see here was actually a very good airplane. It was the Mirage of its day. I say that somewhat tongue in cheek. You'll notice that it's a Dasso photo. Well, Marcel Dasso - his name was originally Marcel Block – and so this was indeed a Dasso airplane.

The French developed - at the end of the 1930s they were getting their act together. They were developing some very fine airplanes. They actually had a pretty good air doctrine at that time on how to use air power, but it was a case of too little, too late, and they simply couldn't catch up. And so the price was that you had basically [inaudible] making a victory tour to Paris in 1940.

That photo - if you're in Paris, you can stand on the very spot. It's by the – between the Musée de – the naval museum and the Musée de Lande looking down then toward the École Militaire. Now, why was this? I would argue because of these qualities that you see here.

The French government was in chaos. They had seven cabinets in two years. They had multiple service secretaries and service chiefs, constantly changing priorities, shifting doctrinal foundations. The industrial base was questionable. There was a lot of social welfare mindset, a gimme-gimme-gimme mindset in the country. There was a very strong pacifist inclination, primarily among the intelligentsia at that time period.

The self-before-service not service-before-self, I throw that in with particular reference to the industrial unions in France at that time, which were obsessed with the 40-hour work week and not willing to give it up, even in the face of Germans working 60-hour work weeks as they were building up for the war.

And finally, the Army was dominant. The Army culture was so dominant that even though you had an independent Air Force, by 1940, when they finally got into the dustup with the Germans, the Air Force commanders were put under the control of local corps commanders – corps and division commanders.

Now, armies have a very interesting view of air power. They tend to be very concerned about seeing it directly over their heads. You know, I thought it was kind of interesting in the 1990s, when the U.S. Army was fighting for the right to send their helicopters deep, but they wanted the right to have U.S. Air Force fighters orbiting basically over the corps commander so he could be reassured that nothing bad was going to happen to

him. Well, that kind of thinking in 1940 set the stage for the destruction of France. And thus was French air dominance lost and, indeed, France itself.

If you take a look at those qualities again, you might think about how many of those qualities are affecting us today and what we need to think about confronting those.

Let's take a look at a very different air campaign. Let's take a look at the invasion of France in 1944 by the allies. The critical factor, once again, was control of the air. George Marshall, before sending off the boys, so to speak, said that he was staking everything on our air superiority.

And when Dwight Eisenhower's son went out to meet the old man on the beachhead of Normandy in 1944, he looked around at all the supplies on the beach and said you'd never get away with this without air superiority. And Eisenhower said, without air supremacy I wouldn't be here. He recognized that he had something beyond mere superiority.

Air dominance over the beachhead, air dominance during the breakout was really the enabler for all other forms of air attack and thereby, of course, greatly assisted in what happened in the ground battle. Basically, because you had control of the air, the fighter bombers were free to do their job. Because the fighter bombers were free to do their job and you had fighter pilots riding up front with the armored columns as they were moving out against the Germans, of course the ground campaign went surprisingly well and surprisingly rapid, certainly compared to what they had experienced in the First World War.

The German reaction to this was predictable. And I think it's interesting because if we take a look at this, we have a group of high rollers here, Bodo Zimmerman, Friedrich Ruga who was Rommel's naval [AD], Rommel himself - of course the great Desert Fox, now a German force commander for France, and an anonymous German army colonel.

The first thing they did was complain about their lack of mobility and naturally the next thing they wondered about is where their own Luftwaffe was. But I find it really interesting to see that you have this persistent reference to air power taking away mobility - air power pinning the enemy in place – and finally, of course, the most interesting thing is that Rommel himself is removed from the fight by air attack on 17 June. A Canadian reconnaissance aircraft flown in the RAF spots his cars, calls in a strike flight of Spitfires, and he's strafed off the road. Profound implications, of course, for the subsequent conduct of the campaign.

So where was the Luftwaffe? Well, German science and technology, which had always been gold standard, certainly from just before the First World War in aeronautics on was – German science and technology gave them the potential to do many different things, but they weren't able to do it because Allied strategic air attack had destroyed their manufacturing, sustaining, and basing infrastructure, denying them the ability to take advantage of their own technology.

This led to a golden age in air supremacy. You know, if we take a look at what were able to do after the Second World War, we were a powerful country, we had a tremendous – we had a tremendous economic and industrial base available to us.

We were able to execute all sorts of functions. We had had an undisturbed infrastructure. We were the inheritors of a great number of highly qualified people who had come here because of, either before the Second World War or after the Second World War.

And so we were able to extend our dominance in aeronautics across a whole span and range of issues, all the way from maritime supremacy through commercial air transport operations, through military global reach, through military global power, and do some pretty interesting things technically, as I've shown here as well.

Now, at this point, it's interesting to take a look though at what was actually happening in the fighter business, because once again we tended to see this idea, well, we've been through World War II, we've been through that kind of thing before. Now we need to think about a different form of fighter aircraft development.

And when you take a look at the aircraft that we developed in the immediate post World War II era, we see that there were a number that needed a great deal of work to make them successful. There were a number that represented unrealistic concepts. You really didn't get very much for what you were trying to do and, in many cases, you got nothing at all.

And there were very few that were kind of swing role extremely useful basically straightforward out-of-the-gate successes. I would argue that there were really only three. The F-86 in Korea; the F-4, which was a Navy program that transitioned to the Air Force and, of course, to the NATO nations as well, and other nations; and the F-5, which we were not really big players with but which, of course, was a tremendous aircraft in terms of the NATO environment.

Southeast Asia really highlighted this. It highlighted how far away we had gotten from recognizing the importance of air dominance. You had fighter forces deployed to Vietnam that had

never done dissimilar air combat maneuvering training, that had never fired on a towed banner, that did not have radar warning gear.

Some of the horror stories that come out of that, and there are, I think, people in this room who experienced some of that, were very, very grim. And this was dealing with some relatively very basic threats. If you take a look at the MiG-17, the MiG-19, even the MiG-21 for that time period these are not threats could be taken lightly, but at the same time, they are relatively basic straightforward aircraft.

We were taught very hard and beneficial lessons, and it fell on the fighter pilots to make things work. People like Robin Olds, who is, sadly, no longer with us. But because of these people, we came back; we got grounded very, very quickly. Frank Alt of the U.S. Navy, Robin Olds, people like that brought us down very, very quickly to some fundamental basics.

Training and combat absolutely are tied and go together. There is no substitute for experience. You have to give that to the fighter crew before they deploy. Fighters must be fighters; they can't be bombers disguised as fighters.

And test. When you're doing tests, the tests must be focused on the war fighters' needs. It must be realistic to that warfighting environment.

Out of this, we had the reshaping of the fighter force. And the classic example, I think, of that is the F-15, which is arguably, for the jet age, the most successful jet fighter ever developed; a tremendous machine. Very long in the tooth now, unfortunately, but a very, very fine aircraft for the time in which it was flown, and it represented the kind of package of qualities that made it, in its day, the F-22 of its time.

One thing we really learned was that air superiority is never enough. Now this is a term that we throw around an awful lot. We always hear this term "air superiority, air superiority, air superiority". Air superiority is the minimal condition in air combat that you wish to function under. Because in all cases, you will still take nagging, annoying, difficult losses that, strung out over time, particularly if you have a small deployable force structure, tend to cause you serious problems.

I'll give you one example; the Arab-Israeli War of 1973. Israel never lost air superiority over the length of that conflict. And yet in 19 days, it lost 109 airplanes representing 35 percent of its pre-war combat air strength. It never lost air superiority but, as you can see, that was an attrition slugfest.

Let's take a look at the Falklands War. Neocolonial dustup at the bottom of the South Atlantic. Who cares? Well actually, we cared for a variety of reasons. The Brits had the ability to project power ashore but not enough. They had the ability to undertake air combat operations, near superiority operations, but not enough. They had the ability to have airborne early warning, but not enough.

The end result is they were not out of reach of the foe. They were in a position where they got into an attrition slugfest, and they came very, very, very close to losing the war. Fifty percent of the bombs that hit British ships failed to detonate because of fusing errors. Had only a small percentage of those bombs detonated, Britain would have lost the war.

Well, why should we care? Well, we care because the Thatcher government would have fallen, and if the Thatcher government had fallen you would have had a dramatic transformation and change in the nature of the Cold War relationship in Europe, with Russia and the United States. You would have had, of course, a complete change in the nature of conflict in international relations and South America.

Super powers have to be able to project power, perhaps simultaneously, into multiple crisis regions and win decisively in those crisis regions against regional actors that only have to be concerned about what's taking place in their own backyard. And that is why the dominance issue is absolutely critical.

Desert Storm. Desert Storm was a classic example of what happens when you have dominance. We had here a coalition that contributed a very large number of aircraft. It was built on the longstanding partnerships. One of the very useful things was the long training relationships that had existed since the Vietnam era among airmen.

And of course, at the onset of the crisis, I think people realized very quickly how these things rapidly come up. What is interesting to me is how rapidly once you had an agreement from the Saudis to allow basing, how very quickly things started to unfold.

We had the first fighter wing deployed to the Gulf that arrived. Three hours after its arrival, it was undertaking its first combat air patrols. You had RAF Tornadoes arrive very, very shortly thereafter. And by the middle of September, the situation had largely stabilized and we were in the buildup phase of Desert Shield.

When we take a look at what happened actually once we got into the war in January, you find that basically – you know, here's the raw stats – basically, this was a war in which you saw

the decisive application of air power where things worked very well. But they worked very well largely because on opening night and in the first two weeks of the war we absolutely utterly destroyed the Iraqi Air Force and the Iraqi air defense network and their ability to come back at us. And of course the critical attacks were the attacks on opening night, which really set the stage for the failure of Iraq to successfully prosecute a defensive strategy against us.

This was seen, of course, at the time. We had Bush the First, who says - quite presciently in a graduation at the Air Force Academy – Gulf lesson one is the value of air power. [Maliakov] of the Soviet Union, the then-Soviet Union, I think summed it up very nicely. A textbook example of what air supremacy means. William Perry, who of course was SecDef in the Clinton era, said we had air dominance, we liked it, and we're going to keep it.

Well, I salute Bill Perry for his perception there, and I hope we do. There are some things that make you wonder. Here's the time to initial operational capability for selected Air Force fighters since the time of the Second World War. This is not a very encouraging slide. You know, if you take a look at this, we've had basically a ten-fold increase. It took about two and a half years for the P-80 in 1944/45 up to the F-22s twenty years today.

Now, if we take a look at this, this reflects really the complexity of the acquisition and political process. You know, we have in the textbook acquisition world, you have acquisition seen as very rational, very straightforward. There's a bunch of people who sit around and think great thoughts, and out of these great thoughts things flow in linear fashion and we go from one to the other.

People recognize that there are some complexities in here; the much more complex view where there is a lot of cross-talk and chatter. One model that I kind of like is the idea that actually it's not even this defined, and what you really have here is a soup bowl where there's a whole bunch of issues and things that come together. They range from strategy, and public perception, and need, to crisis and, you know, everything comes together. And out of this you see some sort of fusion and a requirement.

The critical process is really the playing field. And the playing field that governs air dominance, just like it governs everything else, is the political process within the United States. When you have programs, as you have now, that tend to stretch beyond the 20-year mark, what you see here is you see a situation in which the political process becomes a tremendous hindrance. It becomes a hindrance because every administration - even if it continues some policies - every administration, by and

large, exerts its own influence on events. You have a change-out of characters. You have a change-out in leadership.

When you have a 20-year program, you're dealing with multiple service chiefs. You're dealing with multiple members of the House of Representatives, multiple Senators, multiple presidencies. You're dealing with a dramatically constantly changing external world, external technical environment - think of overlaying Moore's Law on this, for example - and you have personnel changes.

That idea of that two-and-a-half year program that you had in the Second World War, where everything was in the term of one president and one senator, just beyond one representative, and one service chief, and all the program people that started the program were still in the office when it hit IOC - those days are no longer with us. And that's why it's absolutely critical that we make the right decisions off the mark now because, if we don't, playing catch-up is very, very difficult.

Now, thanks to the miracle of electrons, what you see here is not – what you see on your screen is not what I'm seeing on mine. I'm seeing a row of greens, okay? I think you're seeing a row of yellows.

The future looked pretty bright by and large in 1976 in all these categories. Now actually, if you think about it, those of us that are old enough to remember 1976, the aerospace industry in 1976 was not exactly on very healthy terms. You know, we had had a drawdown after Vietnam. We had work, we were beginning to have the beginning of some work force issues. We had turning away from technology. But now, in retrospect, it looks pretty much like a golden age.

Today, if you run from top to bottom, you basically have a row of yellows here with one red, the second one from the top. We face a very uncertain and problematical future.

You know, I'll just give you one example from the civilian sector and that is that in the old days, if you flew a long-range jetliner, it was American built. If you flew a regional jetliner it was American built. And we were making up to 18,000 general aviation airplanes a year and selling them around the world.

Now, if you take a look at it, if you fly a long-range airplane its 50/50 of whether it's American built. If you fly a regional airplane it's a hundred percent practically that it's somebody else's.

And business aviation and general aviation were trashed on the basis of frivolous lawsuits by the kind of people that get

$400 haircuts and engage in sleazy affairs in the Beverly Hills Hotel. No names, please.

Moving right along, we're facing some difficult times as a nation. You know, if you take a look at debt and discretionary spending there's must-pay debt out there in the Medicare-Medicaid-Social Security world that we have a moral obligation and a legal obligation to pay as you see this tremendous shift from productive work forces to retired workers. And, of course, discretionary spending is everything else, including defense and science and technology investment.

Around the year 2020, think about how if you're a Representative or a Senator in the United States how you're going to get elected. Are you going to get elected by voting for that top line, or are you going to get elected by voting for that bottom line. I think we know which way that's going.

Meantime, the real world that we're dealing with is a world that basically has been evolving constantly since the time of the First World War, and it's particularly acute right now. We have the netting of fighters, radars, SAMs, AAA, with modern C4-ISR systems, and that is making the role of securing air dominance ever more difficult.

Double-digit SAMs, I think I need not speak much to this audience about the impact of double-digit SAMs. We've gone through the era of the SA-2. We've gone through the era of the SA-6. The SA-20 is now the normative system. It is by no means the most complex or dangerous system out there. If we take a look, we're in a very, very dangerous world, and its going to get more dangerous still. These are becoming the common currency of air defense networks.

Fourth generation fighters are proliferating. I was stunned to discover how many nations they're in. I would have expected maybe 10, 12, 15. Fifty-nine nations are fielding aircraft out there, but when you take a look at them they're basically countering our legacy fighter force.

I think this point was instructive and struck me during the time of the Georgia dustup, and that is if we wanted to do the kind of air exclusion zones that we ran over Iraq in Northern and Southern watch or over the Balkans in the 1990s, the only aircraft that we could do that with today that would be able of surviving the S-300 environment and the advanced Soviet, the advanced Russian fighter environment, would be the F-22.

Let's take a look at our legacy fighters in perspective. This is an unclassified slide, but I think if you take a look at it, it's rather daunting. If nothing else, the age. You know,

if you take a look at our fighter force today, if these were automobiles, they'd have classic car plates.

Ten years ago, I visited General Dave Deptula when he was running operation Northern Watch in Turkey. He was flying an F-15 that he had flown in Okinawa when he first transitioned into the F-15 force in the late 1970s. His son is an F-15 pilot and, surprise, surprise, discovered himself flying Dad's old airplane. That's the kind of fighter force that we have today.

If you take a look at the G limits in that force, how many of those airplanes are really up to the G limit design requirement that they had when they passed out of St. Louis. Very, very – actually, none. And very, very few are even fairly high up into it.

You take a look out there at something like the SU-30 or the SU-35; we're dealing with a very, very different animal. Especially if we take a look at some of the capabilities these have. What these really indicate is that in the low-observable era with the computational power now available to air defenses, your legacy fighter force, your non-stealthy legacy fighter force is a fighter force that needs somebody else to kick the door down before they're able to come to town and do their thing. Pretty much like we did on opening night of the Gulf.

And that's why, for us, F-22 and F-35 set the standard. F-22, I think, primarily. They have demonstrated already the value of fifth-generation fighter technology.

And this has been picked up. You know, if we take a look at the sincerest form of flattery, I think if we take a look at the Russian PAKFA, and if we take a look at the XX-J out of the Chinese, these are people that recognize very well the kind of attributes that they want in their fighter force. And with the numbers that they would likely build, we would see F-22 performance coming back in our face, but our quantities of F-35 aircraft.

What do these aircraft bring to us? You know, if we take a look at what they bring, they bring sweeping. If you take a look at your fighter force and the ability of that fighter force to actually sweep enemy territory, your very low-observable air attacker has the ability to hold hostage, with super cruise, a very large number of targets within a high-threat environment, without the high-threat environment really being able to touch it, or at least not touch it the way one would wish.

The F-35, not having super cruise, doesn't quite have the time advantage that you have with the F-22. But I think the most interesting thing is to take a look at that legacy fighter force, F-15Es, F-16C/Ds, F-18s, even F-18E/Fs; they're not survivable.

They're not survivable in the kind of environment that we're forecasting out there. And very, very quickly an environment that exists in some areas right now; an environment, for example, that exists over Georgia even as we speak or certainly will exist even more greatly in the years ahead of us.

And that is why the bottom line for us, and I think it's important and incumbent for us as members of the AFA to get this message out, is that we need to ensure that we preserve American air dominance. It is crucial, it is essential to the joint force fight. It's not a matter about boys with toys. This isn't something where we're simply trying to get nice airplanes to have on the ramp because they're really neat.

We have aircraft – we have had pilots that have been killed or nearly killed because our fighters have been falling apart. We had an F-15 pilot that took off from Eglin – an F-15 – straight and level, accell'd, super-sonic speed. The aircraft breaks up; he's killed. We have another one who's nearly killed when the aircraft disintegrates around him in flight.

This is not the way you want to go to war. The threat evolution is such that these aircraft that we are confronting, for us to dominate in the fashion that we need to, we will have to have fifth-generation capabilities. We cannot afford to get into an attrition slugfest.

And ensuring air dominance means first and foremost, for us today, that we need to acquire the F-22 in the meaningful numbers we need to counter future anti-access strategies. When you take 381; 381 was a very small number compared to the original number that we had for F-15s.

When you reduce 381 to 183, which looks to me like somebody looked in the mirror and suddenly got the bright idea – 381, 183; that's the right number – when you take a look at this thing, you start to think, you know maybe we don't want to be France in the 1930s.

The most critical task for the United States Air Force has been, is, will be securing air dominance. Let's continue to help them fight for it.

Thanks very much.

[Applause].

Moderator: Dr. Hallion will take some questions, if anyone has any.

Dr. Hallion: My eyesight being what it is, if you have a question just shout it out because I probably won't be able to see you.

Yes, sir.

Question: Sir, what's your sense from a historical perspective of the debate going on [inaudible].

Dr. Hallion: I think, you know I believe that air power brings qualities to every aspect of warfare. You know, if we take a look in just one little way; let's take a look at ISR.

You know, ISR informs all levels of combat; strategic, operational, tactical levels of war. In counter-insurgency, I think air is, you know, we certainly saw in Southeast Asia the counter-insurgency, the air component in counter-insurgency operations was absolutely crucial; very, very important.

Now, the nature of the technology available to us to prosecute those kinds of operations has changed dramatically. You know, what we did in the old days with the loitering pilot who inhabit a system, you may be well able to do with a UAV today. You may be even able to do it with a very small micro-UAV, but that's still a form of air power projection. So I think air power has a very valid role to play.

One thing that kind of disturbs me is this notion that we see sometimes that people think of air warfare as innately high tech, extreme, one level below strategic nuclear warfare, and they tend not to look at air warfare and its applicability across a whole range of other issues.

And my feeling is that air warfare is a generic capability that if you are a joint force planner, and particularly if you're a joint force commander, you need to factor what air brings to the fight. It brings a tremendous number of things to the fight. And that deals whether you're dealing with low-intensity counter-insurgency warfare - going after people in the hills or wherever they may be - or even in an urban environment all the way up to force-on-force encounters, maritime or whatever, on the other end of your warfare spectrum.

Other questions? Comments? Yes, sir.

Question: On your one slide there on unrealistic aircraft [inaudible]?

Dr. Hallion: Yes.

Question: [Inaudible]?

Dr. Hallion: Yeah, see –

Question: -- greater number [inaudible]?

Dr. Hallion: Yeah, it's a very sad story. I'll go into that a little bit through the back door.

The SR-71 program was spawned by a program called the A-12 program. And the A-12, then, had some offshoots. One of those was to launch a drone; that went nowhere. But the other was to develop a two-man system that would be an interceptor, and that was the so-called YF-12A.

Now, we did face a significant Soviet strategic bomber threat at that time. It wasn't as big necessarily as people thought, but the idea that the Soviets were moving into what appeared to be super-sonic, or at least very high trans-sonic bomber systems, caused us to think that maybe the YF-12 would give you the kind of reaction system that you could launch from the continental United States, get it up over Canada or over the Arctic, kill a bomber or two, and then come back. And it cycled very, very rapidly.

What killed the YF-12A was not so much the cost of the system, although it was costly, but what really killed it was the maintainability issues. Having said that, it demonstrated some tremendous capabilities. They were doing look down/shoot down in the 1963/64 time period. Look down/shoot down from 80,000 feet at closure speeds of Mark IV. A 3.2 interceptor head on against a 0.8 bomber operating at less than 3,000 feet, and they were killing them, which, when you think about it, is a very, very impressive performance.

But the cost was, you know, the cost in terms of investment, not the monetary cost but the effort, the infrastructure, and then the system reliability was such that it made more sense to live with something like the F-106, frankly, for that time period.

Now having said that, I was always a big fan of a development of the A-12, a two-place development for strategic attack, which could have been maintained under a very different form of response. And I don't, you know, it adds to my litany of disgust with Robert McNamara that that wasn't pursued. Because we had, I think we had a system there that was a very fine and very capable system that could have matured very, very nicely. Anybody that was affiliated, and I was fortunate to be affiliated with the Blackbird program at one point in my career, it was just a tremendous, tremendous system. And anybody who was involved with that has, I think shares the same fond feelings for it I do.

Other comments? Yes, sir.

Question: Sir, how do you respond to critics that are concerned about [inaudible] and also [inaudible].

Dr. Hallion: You know, 186 is enough until you get into a dustup and you realize you need more numbers. Certainly if we take a look at the AEF basing structure and the fact, the experience we now have with AEFs and deploying F-15s to support AEFs, you realize that 186 is not the number that will allow us to maintain the robust AEF construct that we currently have.

Cost. You know it's really funny about critics. You know, critics trim the program in numbers because they want to cut down the overall size of a program and then complain when the cost of individual aircraft go up out of sight.

We had this really with the B-2. The B-2 – we were supposed to buy 132, and then it got cut down to 20 and we plussed it up to 21, and then we got it into the Balkans and it worked great and everybody said why didn't you order more of them? Well, we didn't order more of them because you folks were the ones that cut it.

And if you take a look then at the maintainability of that system over time and the fact that we're dealing now with the anticipation of decades of service, you can get into a situation where you simply will not have the tail numbers available to you in the out years to do the kind of military mission you need to do.

The problem I have with the F-22 is that when you start getting the numbers down to the 183 range, and you know people talk about getting them even lower than that to a small golden bullet force, you get into a situation where eventually you simply will not have the numbers available to you to exert that kind of regional presence, perhaps simultaneously, that you need to exert. That's why I have a problem with the numbers.

The cost is the cost. The cost is the cost that it will be simply by cutting the numbers at that point. When you cut the numbers at that point, it doesn't mean that the threat goes away. It doesn't mean that somehow you're going to be able to do what it does with some other magical system.

Aircraft develop over time, and they refine over time. We do not know how the F-22 program will turn out. Let's presume it goes ahead at whatever numbers that one picks, chooses to pick. At some point, 15 years, 20 years from now, will it be an F-22 with the capabilities that it now has today? No, not at all. It will have additional capabilities that will be doing different things. It may even be an uninhabited system. It may be

controlling uninhabited systems. It may be an electronic combat asset. We just don't know. We don't know.

Who would have ever thought, for example, that the F-4 would have evolved the way that it did. Or who would have that thought the – take a Navy program – the F-18 would have evolved with the fashion it did.

But to do that, you need meaningful numbers. And we know one thing, that pulling numbers out without taking a look at the construct that drives those numbers in terms of operational requirements and theatre need, is very, very foolish.

General Mike Dunn, who heads the Air Force Association, has put some brilliant papers out there on how numbers are generated, why numbers matter. And I would invite all of you to get on the AFA website to take a look at those, because they're very, very useful to counter precisely these kinds of arguments.

Yes, sir?

Question: [Inaudible]?

Dr. Hallion: Sure.

Question: [Inaudible]?

Dr. Hallion: Well you raise an excellent point, and that is that you get down to these aircraft and the number that you're fielding now. Those represent the capabilities the aircraft has at the present moment. As you find over time as those airplanes start to eat into their G lifetime, as they start to have maintainability and sustainability issues, what numbers will we be dealing with 20 years from now, 30 years from now, when this aircraft will still be in service? You know, if you run those numbers out, then it argues powerfully that we probably need to revisit this issue and get those numbers back up.

Question: [Inaudible]?

Dr. Hallion: Right.

Question: [Inaudible]?

Dr. Hallion: Right, yeah.

Question: [Inaudible]?

Dr. Hallion: You know, I'm reminded a little bit of the 141 story. You know, the 141 fleet was a very robust, healthy fleet. Everything was going great, and then all of a sudden we got into a bunch of contingencies where we needed mobility, whether it was

Desert Storm and everything that was happening afterwards, and we went through the lifetime of 141s so fast that the next thing you knew it was going out of the inventory. There were airplanes out there that were absolutely dangerous.

You can get away with that to a degree with a relatively benign system, like an airlifter. You can't get away with that in the fighter force. Not if you're up against some guy who has an aircraft that's rolled off a production line because everybody else is wearing one-size-fits-all shoes or what-not, and he's wearing a, he's flying a current generation fighter that's less than ten years old.

Yes, sir?

Question: [Inaudible] argument for air dominance. Why is [inaudible]?

Dr. Hallion: I think it's a little bit like the fox and the grapes. You know, the fox leaps up, can't get the grapes, and says, I really didn't want grapes anyway. You know, if you take a look at some of the food fights that go on in town here among the services, air dominance is something that I think has been tainted by the fact that some of our sister services haven't appreciated how much our air dominance benefits their livelihood.

You know, U.S. Army forces have not been under air attack since 1952. And that's something they really need to keep in mind in terms of what air dominance does for them. If we take a look at colleagues in the sea services, it's very interesting to take a look at naval warfare to see that at any particular time you had a naval action in the last century, that naval action took place within the range of land-based air power at the time that the action occurred. Not land-based air power as it developed later.

I'll give you an example. The Battle of Jutland. During the Battle of Jutland, the Germans had maritime air reconnaissance overhead with Zeppelins, and the Royal Navy had seaplanes doing the same thing. Neither side used them particularly effectively, but it was available.

Air dominance – you know, if we take a look at the threats that we see in the maritime environment and how our intervention forces - our maritime intervention forces - are held hostage by anti-shipping missiles increasingly, air dominance is absolutely critical for the functioning and survivability of carrier battle groups to get into the fight, to be able to get close and to be able to get into the fight so they can project power beyond the beach, which is a significant challenge right now.

So I think air dominance is one that we really need to recognize is a quality that is a true joint force enabler concept. We also need to get away from this fight that has broken out over effects-based warfare, which I find absolutely weird. You know, if we take a look at weapons, weapons are designed to achieve effects. All strategies are effects-based. All combat is effects-based. If it wasn't, would we reduce the [stone axis]? Correction. We wouldn't even have the [stone X]. We'd be just reduced to grappling with each other.

You know, you always try to achieve an effect at a distance and air dominance is one of the critical ways in which you make that happen. And if you're going to do that, you have to incorporate that within some broader joint force strategy to go out there and achieve some sort of, dare I say it, effects-based result.

Any other comments? Yes, sir?

Question: [Inaudible]?

Dr. Hallion: I think that if we take a look fighter forces around the world, we tend to find that the high technology programs that these nations are developing tend to be relatively appropriate for them.

Taking a look at the Typhoon. I'm no expert on the Typhoon but it looks to me to be a very reasonable airplane. A very reasonable step. Certainly, if you take a look at what the alternative is, what do you live with if you don't do this? I think it does represent a reasonable step forward.

There are nations that are able to engage in the fullest range of technology exploitation in others that may be only able to engage in a portion of it, but you find that those nations that are able to engage will always engage to whatever level they determine that's appropriate for them. We're blessed to a degree in that we're able to develop on one hand a very ultra-high tech fused integrated machine like the F-22 and then our companion aircraft - the Tonto to its Lone Ranger, so to speak – is the F-35.

You know, if you think about it, F-22 represented the highest level of stealth that we felt we needed to have to engage with the detailed threats that were evolving. F-35 always represented to us the lowest level of stealth we felt you needed to get away with, but still way ahead of legacy forces. And that's the way to think about them. F-35 and F-22 are not interchangeable systems, not by a long shot.

So you know, nations that are going down the fourth-generation fighter road that have the option to complement their indigenous fourth-generation fighters, which can be very, very useful – systems like the Typhoon, or a Griffin, a Rafael, whatever it is one chooses to point to, if they complement those with something like JSF, yes, I think that gives them some very, very balanced capabilities for the kind of environments that they're in. But it would be really nice to have one power out there that has a fifth-generation aircraft that is exclusively designed for air dominance, that can act as the big brother to help everybody out, and that's what I think you get with F-22. Thanks very much.

Moderator: Thank you. Dr. Hallion, on behalf of the Air Force Association, a small gift that is a token of our appreciation.

Dr. Hallion: Thanks.

Moderator: Thank you, and thank you for your kind attention this morning. It's time to move on to the next session.

I'll remind you that we didn't pass out critiques, but we are interested in what you think. And you can go down to the cybercafé and register your critiques, positive or negative, about this hour or any other hour, or go on the AFA.org website and do the same thing. Please let us know what you think so that we can make a better conference next year. Thank you very much.

[Applause].

Thank you, sir. I really enjoyed it.

Dr. Hallion: Good, good. Glad to do it. Glad to do it.

# # # #