

Leadership Panel
From Vietnam to Present Day:
Evolution of Fighter Aviation

General Richard Hawley
General Ronald Keys
General Richard Myers
General Michael Ryan

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Moderator: I'm Doug Birkey, Director of Government Relations for the Air Force Association. These individuals represent some incredible people that came to the Air Force at a critical time. Most of us are familiar with them because of their senior leadership positions recently, but they in fact commanded an incredible amount of effort and dedication in rebuilding the Air Force after Vietnam and internalizing critical lessons learned that have yielded the force that is simply incredible today.

So to begin this story I'd like to ask General Hawley to talk a little bit about what the force was like going into Vietnam and those initial days, very Cold War centric, then thrust into Vietnam under some very different circumstances.

General Hawley: Okay, this is a pop quiz.

From my perspective, I was a young captain, just came out of pilot training. Got assigned to the F-4 as a wizzo, but I had delayed going into pilot training so by that time I was about to become a captain and the criteria to become a Forward Air Controller in Vietnam at that time was you had to be a fighter pilot and you had to be a captain and you had to have 98.6 temperature. [Laughter].

Having graduated from the F-4 school as a wizzo and having just turned captain because we accelerated promotion to captain like they're doing today I guess for some ranks, I think we made it in three and a half years. Does anybody remember? I think that was it. So I wound up in O2 school straight out of F-4 school at Hurlburt Field in Florida and in about three weeks or so, as I recall, I became certified as a Forward Air Controller to go put airstrikes in for U.S. ground forces in Vietnam.

The guy I went through pilot training within the F-4 was an old 106 pilot, a wonderful man. Unfortunately, he couldn't see very good. I was his eyes when we were going through training. I think those experiences are pretty typical of the force we sent to Vietnam. We weren't very well trained, we weren't very well equipped. The airplane that I flew in Vietnam was a Cessna Skymaster. It was not built or designed to a forward air control airplane. The Air Force hung a couple of rocket pods on it,

stuffed 5,000 pounds of radios in the back that if you lost the back engine it quit flying. That was pretty typical. We were not well prepared for Vietnam from my perspective as a young officer in those days. And I'll turn it over to the rest of the panel here to share their perspectives, but that was mine. This country was not prepared. We were prepared in those days basically to fight a nuclear war or to deter a nuclear war. Even the fighter force was really focused on the nuclear strike mission. When we found ourselves in the midst of an unconventional fight in Vietnam we weren't very well prepared for it from either a training doctrine or equipment perspective.

General Ryan: I came out of pilot training and went immediately to Eglund Air Force Base after going through radar school as a wizzo and eventually upgraded in country to AC. But while we were at Eglund we knew that we were going to deploy to Southeast Asia. In fact we knew we were going to go to Udorn in Thailand, and we knew that our mission was going to be escort and CAP and also strike.

It was incredibly bad the way we were trained. That is that we never shot a missile before we went. We never shot the gun in air-to-air mode against a dart or banner. We were forbidden to practice air combat maneuvering by regulation and by edict.

So here we were, a force that was going to go over and be primarily escort, going into North Vietnam where we flew most of our missions, and we were completely untrained.

That struck me as something that I never wanted to happen again.

We went out and practiced ACM on our own and just didn't tell anybody about it. We'd schedule the ranges and we'd go out and do it because we knew that we were going to have to do it, but we had no formal training coming from the Air Force.

So break/break. Here we are. I've become the Chief in '97. We were at the lowest GDP we've been, percentage of GDP we'd been in in the history of the Air Force. Now we have some choices to make. Do we take down infrastructure? Do we take down modernization? Do we take down training? My answer to that was we will let infrastructure ride; we will let modernization ride; we will train, train, train and never send our folks into combat without great training. That's where it struck me.

General Keys: My experience is similar. When I look at this issue, of course I wasn't that smart back then, I was a lieutenant when I went to Vietnam. So my focus was, am I on the flying schedule today and tomorrow, and if not tomorrow, why not? That was sort of all I learned out of Vietnam. So it was a little bit later that I figured out looking back that some of

this stuff was not as it should have been, because we were in a test class. We had 15 second lieutenants when we started, coming out of pilot training, going to the front seat of the F-14, 15 back-seaters that were upgrading. We went to this test case to see whether or not you could actually fly the F-4 right out of pilot training.

Then the system said you know, we've got to assign these guys somewhere. They were going to send us to Europe, but there were a lot of pilots in the back seat that were upgrading locally to the front seat and the system said we're going to have an insurrection on our hands if we send these lieutenants over there in the front seat and they sop up all the sorties.

So by default they said well, we'll send them to Vietnam. So off we went. And oh by the way, they had lost some airplanes out at George Air Force Base doing BFM's, so they cut our BFM out of the syllabus. So we had no air-to-air in our syllabus.

As I started to look, in preparation for this, I thought about what are the things that we didn't get? No one said anything about gunship escort that I spent half my time over there at night escorting gunships. Escorting the ranch hands as they were spraying. No one said anything about that. I had never done a pod roll-in until I did a pod roll-in for real, which was exhilarating. Reccy escort with bombs, going north with the 101s and the RF-4Cs. No one said how to do that.

Bunt bombing. I almost ended up jumping out because of bunt bombing which was one of those techniques of get down to 3500 feet, put the pipper on the target, push over until you get to 2000 feet, get the positive G and pickle. Important safety tip - only one bomb at a time. [Laughter]. No one told me that. So we're boring around, boring around, boring around, finally we got to the point where we were almost out of gas. The lead says, well, arm them up, we're going to bunt bomb. He said, "Arm them up." So the lieutenant, he arms them up. And about as that fourth bomb was coming up, I knew this could not be right and I was in the pull, but I took a lot of shrapnel in the bottom of that F-4. We didn't train on that.

How to drop Mark-36 destructors. Low level, high drag. There was a technique to that. The M-72 delay bombs. You had to get just the right angle, otherwise they'd broach or they're bury so deep that they wouldn't sense anything.

Self-illumination and night flare. I spent half my time as a night FAC. What did I know?

So those are the things that I, when I look back on that.

The other thing is, we had no AEF. We were not structured for a long term fight so we had nobody to rotate. So we had people coming through, you had to fly with an IP for your first flight. We had one guys who they sent him to Tonsonhut to fly OB-10s. Couldn't land the F-4. So he got all the way over there, couldn't land the F-4. I had a number three take command of a flight away from number one one day. I have never in my 40 years since been in a situation where one was so screwed up that number three said lead, get on my wing. I have command of the flight. Good gracious, he actually got on the wing and we survived. Got below the weather and didn't flame out.

But those are the kinds of things that we were facing.

The other thing in the organization is command and control. There was no command and control that I could see, now that I look back on it. You never knew where you were going to go. The frag was mainly -- the same call signs went to the same place at the same time of day with the same ordnance. So you heard a call sign, you knew where they were and what they were doing.

You'd get these disembodied voices that would come out and say, "This is So and So with a heavy artillery warning in the vicinity of Alpha Delta." That meant the B-52s in a cell of three were dropping through everybody else in Alpha Delta and you were hoping that you knew where Alpha Delta was. Often Alpha Delta was not on your map -- even though they were. Or someone would come up, "This is Igloo White with a track mover in the vicinity of Victor 19." That meant they had a bulldozer at Victor 19 but you were not cleared to know where Victor 19 was so you couldn't get there.

So it's all of those kinds of things, that when you look at what we're doing now, it is so different. I think that's what my resolve was coming out. When I got to the Weapons School a few years after Vietnam, we need to train like we're going to fight. We need to figure out how we're going to fight and then we need to focus on making sure that people are trained. And you've got to have a system that keeps people that are experienced in the system.

So those were kind of my, as I look back on this. I didn't know it then, but when I looked back I went this just wasn't right.

Moderator: General Myers, obviously Vietnam wasn't a stagnant environment. There were a lot of improvements that came on-line. E-model Phantom; laser-guided bombs began to come into the system. Can you talk a little bit about what that was like to roll some of that in and the results of that?

General Myers: Let me tag onto these folks for just a minute, because I agree with everything they said. They've all hit pieces of it, and I think General Hawley came the closest to my overarching comment. That is, we were an Air Force headed down a certain path and then Vietnam came along and surprised us. So we had to go buy Navy airplanes, the F-4, and modify them to do our work, and they weren't very good. In fact they were pretty awful, I think.

Finally when we got to the E-model and the slatted E, we finally had a machine that was semi-worthy, but they weren't up to the air superiority mission. They weren't very good at dropping bombs. We tried to mandate some systems on them. They were awful. That was because strategically we were headed down one path and the world surprised us.

I guess one of the lessons is that we don't want to be surprised like that again. The leadership needs to be ready, and it's even more uncertain today than it probably was back there in the '60s. It's hard to be ready for all aspects of what you might be asked to do.

But we've got to stay flexible. If we start heading down a particular path and think okay, this is the way it's going to be forever, here's what I worry about. In Afghanistan and Iraq we've had air superiority since day one so that's not been an issue and it doesn't get talked about. When you bring up systems like the F-22 or air superiority, I don't think the current generation have a feel for how important that mission is to success in the battlespace. I'm not saying we're going to need F-22s next year or ten years from now. I don't know. But what I do know is that some of these enduring missions, we need to look at it much more strategically and not just feint to what's popular today and what's being used today. We've got to think beyond that. That's what we were doing when we headed into Vietnam.

The hardware piece, I remember training in Europe, my first assignment before I went to Vietnam. I remember training in Phantoms that had a space for the radar warning receiver but no radar warning receivers because we didn't have that many. What we did have were all in Southeast Asia. So the first time you saw one was probably when you went to combat. When you checked in at Udorn where I checked in, there's something that fills that hole now. What's it do? Somebody says, well it kind of works like this. There's an on/off button. Good luck. [Laughter]. You don't know the capabilities or limitations.

We got better over time. We started with pretty dumb bombs and I did some fast FACING and towards the end we'd occasionally get some laser bomb droppers. That just changed the game over there. I don't know what percentage of munitions were precision

in Vietnam. My guess is probably two or three percent, one percent. It wasn't very much. It was ten percent in Desert Storm so it couldn't have been much in Vietnam that were precision sort of munitions. But when you had them you could make all the difference in the world.

So we did get incrementally better. We learned how to handle the SAM threat. That was something that was new to us. When we started over there I think it was 14 SAMs for one loss. When we left it was something like 80-some SAMs for a loss. So we learned, we got electronic warfare equipment, we got a lot of things that helped us do that.

So we were pretty fast learners. It was a long war, but we were pretty fast learners and that helped, but the equipment really didn't come on-line until after Vietnam, and thank goodness there were people around that, our commanders, that were paying attention. Out of that came the F-15, F-16, the A-10 and all the things that we know. We're still, unfortunately, flying a lot of them today, but that generation of aircraft came out of our experience in Vietnam. We essentially went for a single mission aircraft, the F-15. That was a big debate. Can we afford to do that. F-22 is a similar debate. Not quite the same, but similar.

Strategically we just better be flexible enough to be ready for what the world hands us in the future and not be locked in on a particular mission or set of missions.

Moderator: After Vietnam you all came back, a lot of lessons learned there. Can you talk about some of the programs that you tried to implement? Whether it be aggressor programs, Red Flag, fighter weapons. There were some major, major institutional shifts. How did you impart your lessons learned to the younger folks coming up through the ranks as you were majors and lieutenant colonels and all that?

General Myers: I was lucky enough that after my second tour in the Wild Weazel, left Okinawa and came back to Nellis Air Force Base to, at that time the 414th Fighter Weapons School. That's all changed of course now. But that's the way it was in those days. And the aggressor squadrons were just standing up at the same time.

So we had a chance now to start training like we thought we were going to have to fight for essentially the first time.

It sounds easy. We knew what we had to do, but you also had to convince the leadership all the way up to the four star level that this was important. It was not without cost. There was risk to training more realistically. In fact there was one commander in USAFE, a four star commander in the USAFE Safety

Magazine that when asked, well we're not going to have the aggressors over here and we're not going to train as realistic as some of the other commands like Pacific Command and Tactical Air Command. What do you think that means for the combat effectiveness of our force? He says, "The combat-induced adrenalin will make up for any training deficiencies." [Laughter]. The combat-induced adrenalin.

Well you do have adrenalin, but I'll tell you, you're just going to react, if you're not trained I'm not sure how you're going to react. You're probably going to die all ten steps. [Laughter]. I thought that was stupid. I kept waiting to meet this fellow so I could ask him what he was thinking.

But to try to bring on the aggressors, I traveled with the F-4s out of the Weapons School. We always went with the aggressors. Some wings wouldn't allow you to come on their base and conduct air-to-air training. I'm serious. Some wings would not allow you to come on their base. It was deemed too risky. We might lose an airplane. Some wing commanders were very eager. So you kept going back to the same place.

Then we started going to the training bases. We went to George and Homestead. So it all worked out, but it was not without having to put some pressure on it.

When Red Flag started up they came over to the Weapons School and said okay, we've got these ten missions, how do you think you ought to, how should they flow? Several of us worked on that to help them figure out okay, if you have ten missions, how do we start out crawl/walk/run. We had some pretty good experience in the school in that so we were able to help.

I would just say it took some constant pressure on the system. Although the system, I think, wanted to do the right thing because everybody experienced this and nobody was happy with any of the services' performance in Vietnam. But the Air Force, it wasn't our finest hour, even though our valor was extremely high. People were trying very hard, we just weren't trained or equipped to do it, or organized, for that matter.

General Ryan: One of the issues was being able to deliver live ordnance in your training. There were those who said no, no, we can't go in to the WRM to drop live ordnance. We have to keep that up to snuff. We can't shoot missiles. We fought very hard, all of us, particularly those guys who worked at TAC Headquarters during those years in the '70s when people were trying to cut the budget back, to try and keep those programs on-line so that the next time our kids went to war they weren't going to go not having dropped a bomb or shot a missile.

General Keys: I think more than that it was the argument of you only know what you know and you don't know what you don't know, so you need to constantly check these weapons out and you need to fire them and you need to see how do they do against EW, and you need to fire them at long range and close range and see where the mid ranges are, and see, does the software actually work like it's supposed to work. That was a battle because it was costly to do that and you had to have realistic drones because you needed to have the full scale drones and the small drones and you needed to be able to put the hammer down and see what would really happen.

The AIM-7 performance in Vietnam was abysmal. Then we got into Desert Storm and it did better, but it still was not red hot because we had been doing so much patrolling and carrying these cap and carry AIM-7s, and I think the first eight we fired just dropped off. But we didn't know that. So it's a constant thing. Readiness is like cut flowers. Every day you've got to go out and cut more. It never lasts. That's been the challenge.

That sort of came out of Vietnam, as we looked at that and said we're not going to do this like this again.

Moderator: General Hawley?

General Hawley: I was going to let that one die, but since you prodded me. [Laughter].

I think some points have been brought up here, and forgive me if I get a little ethereal here. But Ron brought up the point about people didn't want to test our systems because there's a cost to it. Of course the Air Force has been fighting that for a long time. Dick brought up the point that we don't want to fly ACT because there's a risk to it.

I think one of the lessons that we ought to have learned, probably didn't, but we could have observed it at least out of some of these experiences we're talking about is there's a cost to not doing things also. There's a cost to not carefully testing your systems and exploring the full range of the envelope of missiles, for example, down at Wessop, because then you go into combat not understanding your system and not well prepared for the fight that you're about to engage in.

There's also a risk in not doing things. When we think about, and when leaders today think about the costs and the risks associated with various decisions we need to go beyond the near-term cost and the near-term risk that they're thinking of. Gee, I might lose an airplane. And think about the longer term cost and the longer term risk of failing in a major endeavor like a conflict like we did in Vietnam where we went in totally unprepared for an air-to-air fight. We wound up against a third-

rate power and had to fight for air superiority every day. And do you know how many fixed wing airplanes we lost in Vietnam? Among all the services? More than 2,400 fixed wing airplanes were lost in combat in Vietnam. Think about what would happen to the decision process today if we were losing airplanes one-tenth of that rate in the current fights? So we need to think about the full gamut of cost and risk and make sure we think about the whole equation rather than making decisions based upon what might happen next week.

Moderator: Along this time we had a lot of new weapon systems coming out. F-15, A-10, F-16, a lot of new missile systems, et cetera. How did that change the way in which you fought and the option available to you and what it meant for the country?

General Ryan: I'll jump in on this one aspect of it. The idea of the high/low mix between the F-15 and the F-16 was a very very good construct for modernizing our Air Force. What it allowed you to do was to take the high end single mission F-15 and gear it completely toward the air superiority side and then let the F-16 be the multi-mission airplane. The differences were stark. Having AMRAAM on an airplane changed the game, completely changed the air-to-air game. Having maneuverable aircraft completely changed the game. Having smart weapons on smart airplanes completely changed the game and allowed us to be very very precise as we saw what happened in Desert Storm and Bosnia and Kosovo and on forward. Those are legacies of that era of coming up with these very very capable machines and very very precise munitions. It changed the game.

General Keys: I think that goes back to testing your weapons and knowing your envelopes. There was a big change on training.

The biggest, in my opinion, the biggest change we had in air combat was when we started accepting all aspect kills with our radar missiles. For a long time we had AIM-7s and in training you could fire an AIM-7. You could fire one in the front, and then you had to fire the second one, it had to be behind the 3-9 line, which only served to tighten this fight up.

When we finally got to the point, we started looking to PK. You'd go let me see, N minus one times N minus one, actually if we fire two of these we've got a pretty high probability, and if we fire them in the no escape range here, if I fire two of these things you're dead, so you're out of the fight. That was a huge change. Because then the commanders would come to you and say we came in with a four-ship, two of us got killed head-on and we're out of the fight and we got no training. Well, you were stupid. Don't be stupid. These weapons are dangerous. But that changed the context of the fight. It goes back to train like you're

going to fight. If your weapons will work, then you've got to start throwing people out.

Same thing in Red Flag. As people would come in and they'd get shot down by SAMs or they'd get shot down by adversary air, you'd pull them out of the fight. There was a huge argument about well, if you pull them out of the fight then they don't get to go in and drop their bombs. But of course if you let them go on in after they've already been killed it screws up the tactics in the target area. So you've got to look at all of those costs.

But there was a huge change when we changed the systems that we had and made them more technologically capable. I remember, I think I see a Navy guy sitting out there. That was a huge argument that we had with the Top Gun about whether or not we were going to kill people head on and throw them out of the fight. But that's the real world. Otherwise you're always going to get into that tight dogfight and you start to learn lessons that aren't necessarily the real lessons. You can't afford to do that.

General Myers: Let me just take it, we're talking about the equipment. We touched on this, or some of the panel members touched on the personnel aspects of this. In Vietnam, of course, we didn't, other than a few rare occasions, we didn't do unit deployments. We had units over there and we had individual replacements that came in. That drove the Air Force into finding the individual replacements. Every day of every year you had to find somebody to go over and fill up a spot over there somewhere. It was a very inefficient system and it brought some people into the system that should never have been in the F-4 or the F-100 or the F-105.

I can remember, we've told the stories a little bit. I remember this one guy in my RT class, a fine man, a major. He'd never been faster than 180 knots in his whole life. He flew a gooney bird somewhere. All of a sudden he's in F-4 training. He could probably overcome that if he could have seen, but he didn't see very well. So he was the guy you wanted to get in your basic fighter maneuver flight because he was blind as a bat and you could whip up on him and you got a good grade on your report card there for that particular phase of your training.

So he goes to Vietnam, he joins the squadron, they figure out very quickly that he's a nice man but he can't fly a Phantom so he winds up in the command post. He's just kind of a waste of training -- we wasted a lot of dollars that way.

Then there was something else that happened. I think this is all important because our personnel policies are what they are today but they won't stay that way. People will think about, well, maybe we can be more efficient if we do it this way or

whatever. But I think that individual replacement, at least my experience with it was probably not the best.

And it's hard to see how we could ever go back to the good old boy system, but there were clearly some of the senior people sent to Vietnam were there to fill their square so they could be competitive for general officer.

So you've got these colonel wing commanders. Some were terrific. Some had to fly with the most experienced IP just to taxi down the ramp and take off. But they always had to lead the combat mission because that's what they wanted on their performance report, you know, "Led combat missions to [Root Pack]"m, whatever. Well, real fine. There's some IP in the back sweating bullets trying to get this idiot through it.

Just a little anecdote. I remember this wing commander. We had one like that. He may have been a nice man. We never got to know him too well. [Laughter]. But his habit was on the weekends, he lived in this little hooch there at Udorn, and he'd put on his pith helmet, I don't know if they were still part of the garb in the Air Force in those days, and his shorts. He went out and he tended his banana trees next to his little hooch, the commander's hooch, which was right across the [klong]. Do you know what a [klong] is? It's something you don't want to fall in when you're drunk. [Laughter]. Well, actually, if you fall in when you're drunk you don't care. You don't want to fall into it sober, for darn sure. [Laughter].

Our 13th hooches were right across from the wing commanders' hooches. We'd sit there on the weekends after we'd fly a combat mission. He'd be out there all dressed up in his pith helmet tending his banana plants. Finally one night, I certainly wasn't part of this, but some of the -- [Laughter] -- couldn't stand it any longer and made a night raid and pulled up all his banana plants that he seemed to love.

But that was the kind of leadership we had. We had a real, it wasn't always like that. You had the Robin Olds, of course, and that sort of thing. But it was that contrast.

I think today we're much better off, our whole system, the way we select our leaders. We wouldn't tolerate that. The young folks wouldn't tolerate that. But we didn't know any better. We knew we didn't like it but we didn't know any better.

I just think those lessons have to be captured because somebody's going to come up with a better idea and that's their prerogative, but we don't want to go back to some of these ideas that we had that didn't work out so well.

General Ryan: I think the AEF system in some ways handles that for us because it forces us to do the planning ahead, to make sure they're trained and ready to go as they come into the zone and gives us a rotation base.

General Myers: I just don't want somebody to reinvent it and go back there.

General Hawley: Before we leave the equipment issue, there's a couple of things I'd like to comment on.

One, most of the generation of equipment that all of us operated most of our active duty lives was actually the product of our earliest days in Vietnam. We dropped our first [pave way] bombs, the great [Fan Wa] bridge mission where the [pave way] earned its reputation occurred in the spring of 1972, pretty late in the Vietnam War.

The first F-15 was, production F-15, was delivered in November of 1973. So it began development quite early in our Vietnam experience.

So the leaders of the day reacted pretty quickly. They began to take the initiative to develop some of these follow-on systems that have served us so well pretty early in that fracas.

It's also interesting to me that they began those in the '60s. And somehow, between the Air Force and industry, they managed to develop and field these systems in about a half a dozen years. From the glimmer of an idea that we need a follow-on fighter to replace the F-4, to an F-15 took less than seven years and today it takes a couple of decades.

So this wasn't all bad back then. I bad-mouth how well I was trained, prepared and equipped, but clearly the folks who were running things at the time did a few things right, too.

Moderator: Fast forwarding a little bit, when you saw the lessons come back from Desert Storm and those fights and all of that, how did you compare that to your experiences in Vietnam? Were you satisfied by the force that went over and the lessons that were learned from that? Can you describe that a little bit?

General Hawley: I watched that one as the XO for the Air Force. All I could do was marvel at how well our young people did in that fight and how well our equipment did in that fight.

Unlike my experience going to combat, it looked to me from that perspective down in the basement of the Pentagon running the Ops Center and trying to keep the Chief and the Secretary informed of what was going on every day, that somehow the generation of leaders who prepared that force between the

acquisition system that bought them their equipment, the maintenance system that sustained that equipment, and the training process -- Red Flag, aggressors, the Weapons School -- all of these initiatives that flowered in the post-Vietnam years bore fruit in that short fight during Desert Storm, and it engendered a lot of pride in a lot of hearts I think at that time.

General Ryan: When Dick was the XO0, I was the Director of Operations for TAC. Because nobody else was around, they designated me "Horner's rear". [Laughter]. Don't picture that. [Laughter].

So we were responsible to bed the force down and feed it from an organizational standpoint, to pick the bases they went to and then ship them off and actually launch them.

The thing that was amazing to me, I agree with Dick, the combat prowess of these guys was tremendous. But the units that went over, our enlisted, our guys who take care of airplanes, our maintainers, our personnelists, all that people sent over there, we dumped them into bases in Southwest Asia that we had never really scoped out. They put it together and made it work. It was just fantastic.

We'd get these calls back to say we need ten generators at Al Udir or some damn place. We'd ship them there and they would take them off the airplane and install them.

Our engineers did fantastic work and a lot of it was a pickup game. It was just a tribute to the force and how flexible and how well trained they were.

General Myers: But there were some lessons that were relearned, not necessarily by the U.S. Air Force. Mike remembers this. When Mike was doing that I'm over at the Director of Requirements of Tactical Air Command trying to shove a few things that direction. But wasn't it the Brits that decided they were training their whole life to go low level. And if there's anything we learned in Vietnam it was that when you're in the real time zone of AAA, in other words they don't have to lead you very much, it's a pretty lethal environment. I think General Horner did not want them down there, but they flew down there and they got shot up and then they moved up.

Somebody's always trying to do it a little bit better. One of the reasons you fly low level, the only reason I know you fly low level is because it's a hell of a lot of fun. It is the most fun you can have in an airplane. The tactical advantage to being down low is pretty nil. There's not many SAMs that can't reach you down there and AAA certainly can and most other things.

So the tactical lesson, if we want to get down to that level, tactical lessons you have to stay fresh on and maybe low is where you need to go. I have no idea today, but I doubt it. I just remember kind of re-learning that lesson as we watched Desert Storm unfold. Isn't that right?

In fact I think we had some wing commanders that wanted to go low too and were forbidden, and they didn't, and that was good. But the Brits, a little courtesy to our allies, let them go.

General Keys: One thing I think I learned out of that because I was the wing commander at Bitburg, we sent two squadrons over, but we were still focused, at that point we're still looking at the Soviet Union and we were postured in that direction so we were all hardened up. So we weren't a very expeditionary force.

I can remember my civil engineers going out to a couple of my avionics bays and actually using blow torches to cut stuff loose that was not ready to be moved. We were going to fight in place there. We had to take some of those test sets and actually cut them out of the frames because the bolts wouldn't come loose and we needed them, so we were cutting that stuff loose and putting them on airplanes to send it downrange.

To the comment about not knowing where we were going, my guys were going to Al Karge. It turns out there were two Al Karges. There was an Al Karge old, which we weren't going to; and there was an Al Karge new, which we were in the process of putting a billion pounds of concrete into. We were trying to get a picture of what the hell it looked like so we could kind of figure out what we needed to take through. That took almost an act of the NSC for us to have access to a satellite picture of Al Karge new so we knew exactly how it was going to be laid out and where we were going to be bedded down.

If you look at that and you look at the opportunities -- I go all the way back to Vietnam. In many cases I couldn't see any of the BDA pictures and I couldn't get any of the pictures of targets because I didn't have the clearance to see them. I was the guy that was dropping bombs on them, but I could not get the picture.

We had the KB-19 BDA camera which of course only worked if you pulled off straight ahead, and you were always pulling off and doing jinks, so those were no good, so you couldn't get pictures.

Now fast forward to what the guys get down-range now. They are into the net. They're web-enabled, pulling down intelligence products so that they've got minutes old video or minutes old

high resolution pictures. So those are kind of some of the stuff we learned back then, that we still had a long way to go. Getting that connectivity down to the guys and gals that actually need it when they're going out on a mission.

Moderator: We find ourselves at a very challenging time right now. Obviously a tremendous budget crunch, quite a bit of focus on asymmetric warfare. Yet we also find ourselves surprised by the unknown. The recent example with Georgia, of course, is high on everybody's mind. What are the lessons you would like to impart as you look to building the U.S. Air Force going forward, and your experiences, and what are the vectors you see that need to be taken?

General Keys: This is a favorite of mine.

Number one, if you remember the reformers, way back, the book *The Straw Giant* and all that stuff. If we had bought the stuff those guys wanted us to buy we'd be still mired in Desert Storm. Those were F-20 Tiger Sharks, F-5s, they were the Swarm fighters. They had no flexibility. They didn't have the ability to put targeting pods on them, they didn't have any avionics. It was the wrong idea, we didn't buy it, and we were right. So remember that.

Number two, when I was a captain, way back in the olden days, we were flying F-4s and F-14s to Iran and giving them to Iran. Nobody back in the late '60s, early '70s were saying you know, there may come a time when Iran, the Shah dies of cancer, some idiot takes over Iran, he decides he wants a nuclear weapon, and we're going to be mad at Iran.

No one was writing about Saddam Hussein back in the 1970s when we were buying F-15s and F-16s.

No one said you know, I foresee a day when Yugoslavia come apart at the seams and we will be at war not once, but twice, in the Balkans. If I'd even known where the Balkans were at that point.

And we'll be at war in the Middle East twice. Iraq twice. We'll win the first one, then we'll air occupy them for 12 years, and then we'll go to war again.

And oh, by the way, I was reading a book -- way back then I even read books -- and it was called *King of the Khyber Rifles*. It talked about ethnic stress and some of the things in India and Afghanistan. It talked about the Khyber Pass and how many armies had marched in through the Khyber Pass but no armies had marched out. No one was writing back then that we would in fact go into Afghanistan and be successful where the Soviets would not be successful.

So all of these people who talk about they know what the future holds, I don't think they do. I don't know what it holds, but I know the equipment and the training and the people we're getting today are going to have to carry us for the next 30 years, and nobody knows where we're going to go. Do we go to Lebanon? Do we go to Syria? Do we go to Georgia? All these places. So you need to build into your force the flexibility to adapt to whatever the situations are.

I think in some cases this high end/low end discussion's been demonized. It's shorthand for you're buying F-22s and you're not buying rifles for the guys on the ground. That's the wrong argument. We have got to come together and start talking about what's a flexible force that we need to do the things that our country needs to be done for? To me that's a lesson we ought to take out of Vietnam.

General Myers: I'll just pile on a little bit in terms of the flexibility. I'm going to aim it at the individual in our leadership down to, and leadership in my view is from one stripe to four stars because everybody has great idea that can make our Air Force better.

I've said this a lot and I believe it. Real transformation takes place between the ears. I don't believe stealth technology is transformational in and of itself. I don't believe a new microprocessor -- they can all help. But I'd hate to see us get too technology focused when really it's how we think about things. That's what Ron was saying. It's how we think about things.

So I think as we think about how we educate our future leaders down in SOS and Air Command and Staff and Air War College and the other colleges they go to, strategic leadership and being flexible and agile in your thinking and not getting locked into your favorite doctrine or dogma is going to be critical for us because we don't know. As Ron pointed out, we're tapping with our cane out there and we don't know what's out there. We can feel things, but we don't know. We're only going to find out when the time's right, and then we better be able to handle it.

So I think it all starts here. The equipment ought to be as flexible as possible. You can say that about it. But I'd be more entranced with the mind than I would with the stuff.

Moderator: Do you have the questions from the audience?

Question: I have some great questions.

The first one is addressed to General Hawley, but I think it actually applies to each of the four of you.

How much of your experience in Vietnam shaped your leadership style when you rose to the command and leadership positions that each you did in our Air Force?

General Hawley: I don't know. You can play a lot of mind games with how you got to where you are and how you develop the philosophy of leadership or whatever you call it.

I'm sure Vietnam influenced it. I don't think anybody ever got shot at and missed or shot at and hit without serious damage that didn't have it affect them.

To me the most shaping things though are the people contacts that you had. For me it was the experience of leading at the level I lead at, and being led, whether competently or incompetently, and I learned lessons from all those people, whether they were competent or incompetent. Every one of them that I encountered along my career path, to include those that I was with in Vietnam. But it was an ongoing experience. I'm not one to believe that any of us were born leaders. I think we all kind of developed a few leadership skills along the way, probably through the School of Hard Knocks.

I was laughing when Dick was describing the guy with the pith helmet because I had one of those in Europe, that you couldn't believe this guy. How did he become a leader in our Air Force? All of us captains were saying holy cow, what are we going to do with this guy? But you learn from that. You learn some "don't do's" from those kind of things that hopefully serve you well as you move along in your career.

I can't say it was Vietnam. It was a whole chain of experiences that helped shape my outlook and my approach to the leadership challenges that I subsequently was gifted to have an opportunity to take on.

General Keys: Some people are put on this earth only to serve as a warning. [Laughter]. I had a few of those guys.

[Applause].

Just like Dick said, my career was shaped by the people that I worked with and worked for. I was very fortunate. I had great guys.

I had a squadron commander, Whiskey Bill Wigger. He was one of the last of the red hot fighter pilots. He could out-bomb you, he could out-fly you, he could out-drink you. And I remember saying when I grow up I hope I'm a squadron commander like Whiskey Bill. He was fair, you could count on him.

An Ops Officer, Mad Dog Bails, same kind of guy.

Then I got to Weapons School and I'm joined up with guys like Dick Myers and John Jumper, Larry Keith, Ace Chase. Those kinds of guys. I think we all took from each other. Hopefully we took the good parts of each other and let the craziness go by as we grew up.

That's what I think all of us have to do. You've got to look at people and say I like this guy's style, I like this gal's style, boy that is dumb. I'm not going to do that ever again. And try and make it better. Incrementally better. You're not going to solve world hunger yourself, but you can make it incrementally better for the people around you. I think that's how you grow.

General Myers: I agree with exactly the sentiments we've just heard, but as you get more senior I think those early lessons -- the good and the bad lessons -- they carry with you. There are some things you don't want to go back and revisit.

So when you're in a position where you can choose different options, you choose the one that you think is not going to take you back to the things you didn't like about your early experiences and our unpreparedness, or you choose the one that takes you back to the sort of things you saw that you really liked, like when we deployed nine Wild Weasels out of a squadron in Okinawa, went to Karat, and we had this little -- sorry, six aircraft, nine crews. We had this little tight -- and our maintenance folks. We were just one little tight unit. We always had the best maintenance stats of anybody at Karat. Jack Chain was the DO, I think, and he would just rail at the other squadrons. Why can't you be like this squadron? Well the reason you can't is because we're six airplanes, we're nine crews, we all know these jets like the back of our hand. Our maintainers know them. They know us. There's something valuable in that kind of lesson.

So when you have a choice of how you organize yourself, you remember that.

It does have an impact, of course, and those are pretty formative years. It can be an emotional experience, getting shot at for the first time. You carried that emotion forward with you as you learned and observed and took notes and I think it no doubt colors how you look at the world when you're in a position to do something about things.

General Ryan: The basis of leadership, quite honestly, from my standpoint is trust and trust is built on integrity. You go through your career and you never stop learning about leadership, about how to engender trust and how the fundamental basis for all

of that is making sure that you make your decisions with integrity, doing the right thing for the right reason.

General Keys: I would just add, one of the great clichés, I heard, or quotes, is from Edward R. Morrow. Someone was talking to him about he became a great radio newscaster and very thoughtful, very highly regarded. He says, I always remember that just because my voice reaches around the world I'm not any smarter than my voice when it reached to the end of the bar. You've got to remember that. You get more senior and you have more responsibility but you're not necessarily any smarter. So you've got to make sure you look yourself in the mirror once or twice a week if not every day, and go am I really doing this for the right reasons? Am I really listening to the people I ought to be listening to? If you don't, you're going to get yourself in trouble.

Question: Another question I think brings and ties your experiences in Vietnam to what these group of Airmen and warriors are seeing today, what differences do you see between the Vietnam conflict and the current conflict in Iraq as far as the freedom of in-theater commanders are given to take the actions necessary to win the war? The difference between the command philosophy, the rules of engagement between Vietnam and today.

General Ryan: Let me just jump in on that one.

Vietnam for the most part had no strategy attached to it that was definable in military terms. It was a war that was more politically driven, and even driven at the tactical level. During some of the time we were going in in the north we couldn't hit airfields, we couldn't hit AAA sites if they were in certain locations unless they fired on you. You couldn't go after the SAM sites unless they were on your target list. It was absolutely stupid.

I think that today the rules of engagement process has evolved to the point where those kinds of issues still play, but commanders in the field must stand up and say no, we cannot operate under those conditions. And even put their careers in jeopardy to make sure that the rules of engagement are set so that the force has the opportunity to do their job and survive. That was not the case in Vietnam at all.

General Hawley: To me the biggest difference is, my observation of the current fights are that we appear to actually be learning from our experience. I didn't ever observe much learning in Vietnam. We just kept doing the same thing day after day after day and hoping that the outcome would be better if we just kept doing more of it.

I think that somehow our institutions, perhaps foremost the United States Army, has learned better and faster from their experience here than they did in Vietnam.

You know, we had some people in Vietnam who did some pretty innovative things with regard to counter-insurgency tactics and strategy, but they never became adopted by the institution. We basically kept on with this attrition strategy, which in the end didn't serve us very well.

What I've observed in the current fight is I think our institutions have begun to be more adaptive and learning from their own experiences in a fight for which they were not well prepared any more than we were well prepared when we went to Vietnam.

General Myers: Of course I was only at one level in Vietnam, and I think what Mike said and Dick said is exactly right. I don't know how many times the combatant commander would talk to the Secretary of Defense about our rules of engagement in Vietnam, and gee, we're asking our air crews to go out and put their Navy, Air Force, Army air crews to put their butts on the line and we need to have this kind of flexibility. I don't know how much of that was argued.

I know when I was Chairman that was argued all the time. Not argued, but discussed all the time with the field commanders. I don't know how many times we met with, George Casey would come to town, John Abizaid, the CENTCOM Commander; Case, the Iraqi commander; or talk to Dave Barno. It wasn't much of an issue with Dave Barno when I was Chairman in Afghanistan. Always discussing these sorts of issues. Great discussion about what do you need. They weren't always pleasant discussions because we were always asking for a better strategy, a better plan, all that sort of stuff, but we were having these discussions. I think it was very healthy. I can tell you that the President and the Secretary had great trust in the field commanders. Knew them, knew them well, and had great trust in them. I'm not sure that was the same, I know it wasn't the same in Vietnam in all cases. It depends on the phase you were in. And we had regular, Abizaid and Casey would come to town every couple of months. They'd be on the Hill, they'd be at the White House, they'd be in the Department of Defense, they'd be in the Tank talking to the Chiefs. We had this regular dialogue. If there were big problems, they would get worked out. They were not put under the table and forgotten.

Question: The issue of training. You brought that up several times, or the lack thereof.

With the increased use of simulation and simulators today, do you see, or what kind of impact do you see in the operational world?

General Hawley: Let me start with that one as a guy who pushed simulators pretty hard while I was on active duty.

We are always slow to adopt transformational capabilities, but I believe that we have embraced simulation as a fundamental part of our training and it is going to pay huge dividends.

This idea of having a networked web of simulators so that we can begin to train in ways that we never could do when we were focused on all live training I believe is going to be revolutionary to the force.

I'm told that out at Whiteman today they're beginning to wire up the simulators for the B-2s so that they can be part of what we call distributed mission operations, I think it is. DMO, now. I had a different name for it.

But the idea is to allow people to train together in a simulated environment who would never get to train together in reality. So that when they go to war they've at least had that benefit.

One of the things that was in my mind when we were pushing this ten years ago was when do we get a chance to train with people like Rivet Joint? It's almost never available because it was in such high demand in the real world. It was out there doing its real world reconnaissance and surveillance missions and we couldn't ever train with that asset being available.

Things like Compass Call. Even AWACS was in such limited supply that trying to get an actual live training mission with AWACS was hard. Mixing strike aircraft with air superiority aircraft, it was always tough to get people to train with you. You couldn't get together at the same time, the same place, unless you went to Red Flag.

Once we build this environment, this very complex environment where people can begin to train in these complex force packages, and the fight today is far more complex than it was when we went to Vietnam. There were some cosmic systems in Vietnam, most of which were secret so they wouldn't tell us about them, but the environment today is very complex. It involves a lot of interaction among vastly different systems. And when you go to the fight the first time you don't want to have to start talking to those people for the first time and then figure out how you're going to interface with them and how you're going to use their capability and lend your capability to them. That's

what this move towards embracing simulation as a fundamental part of training is going to make a big difference.

Most of my career, simulation was something you had to go do six times a half, mostly so that you could see a red warning light and experience failure of a hydraulic system or something like that because you didn't want to have to do that in the airplane. This is a whole different level of exposure to a simulated environment and I believe it's going to make a world of difference. We can do things in that environment that you simply can't do when you're flying in a live training environment.

Question: One last question as we end this. What differences do you see between the Vietnam conflict and today with regard to weapons in irregular warfare especially, where there are civilian casualties. How can the Air Force, how can we as a nation deal with civilian casualties in the irregular conflict?

General Keys: War is messy. If you look at the civilian casualties that we had in Vietnam, nobody knows how many civilian casualties. When you look at the care that we take in avoiding civilian casualties in today's conflicts, it is not enough to know exactly where the target is. You need to know where the target is, and then you need to know 2,000 feet around that target to make sure there are not innocents inside your frag.

I can remember going in Vietnam, I don't know if we were talking to you, but we were talking to a FAC and he says, okay, do you have the valley with the river that forks at the bottom of the valley? Yes, I do. Do you see the big sand bar? Yes, I do. Okay, I need one right on that sand bar because they're building a little pontoon bridge across there. The lead rolls in and drops. The FAC says, I don't see you, but you're cleared. The lead drops, he comes off okay, one's off hot. Okay. Didn't see your bomb. Then of course the plume comes up. He goes okay, gunfighter, actually you're one valley over. [Laughter].

Those were the challenges that we had then. The challenges we have now is, number one, although we're much more defining on what the target is, we know much more about the target, we go through a lot more strict rules of engagements to even strike the target, we're much better at defining what the collateral effects are going to be, but now you've got immediately your adversary and maybe not even your adversary, this is all going to be on the media. So if you have a weapon go astray, if you have some people there that you didn't know were there, it's all going to be in front of you, so you've got to be prepared.

People will talk about the collateral damage of air and the problem in irregular warfare, but I'll tell you what, you kick

down the door of a house and you go in there with some folks and you machine gun the males and you rape the young daughter that's in there, that is the worst possible collateral damage you can have in an insurgency, and that's happened.

So when people worry about collateral damage from air forces, collateral damage in an insurgency is bad across the board. We need to understand that.

Collateral damage isn't a problem of air forces. We work it just as hard as anybody else, and I don't think there's any more collateral damage from the air forces than there is from any of the other forces out there. It is sad and we don't want to kill innocents, but we've got to be prepared for this because this is a dirty business and it's going to take more than a coke and a smile to make this work.

General Myers: I would only say, of course I've been out now three years, but when we were working those sorts of issues there were some targets that in this case General Franks, CENTCOM Commander, General Abizaid wanted us to review in Washington. Not that we didn't give them authority, they wanted a little top cover to review some of these higher collateral damage targets.

The way we can analyze today compared to the old days, as Ron said, is just remarkable. So we could pick weapon angles that would minimize that. We could pick times of day. We knew so much more about it. We had the weapons that could be, you could dial in what you wanted to dial in to minimize collateral damage. We could pick in some cases the door or the window we wanted it to go in. We could almost determine how much of the structure was going to come down and how much was going to stay up. Those sorts of issues.

We are pretty sophisticated. At least when I was involved with it, anything that we considered high, and that's a definitional issue, but anything we considered high got very good scrutiny. We're very careful.

War, as Ron said, is messy. There's going to be collateral damage. But I think at least from my viewpoint we were very deliberate about that and staying within the law of armed conflict.

General Hawley: We've heard something about the American way of war, and our media doesn't give much credit to the amount of effort that has been placed in minimizing collateral damage in our armed forces. But it is incredible how much effort goes into every application of force to try to make sure that we don't have unintended casualties. To the point where we're even designing the force to help minimize casualties by producing very small bombs that produce a very small radius of kill. I don't think

any other country in the world has ever expended the kind of effort that this country has expended in order to try to make sure that when we do apply military force it is done with precision and with minimal collateral damage. It's a pity that people don't get more credit for the work that's been put into this effort.

General Myers: I would just mention for the intel folks out there, in the end it always comes down to intelligence, too, and what intelligence you have on that target and so forth. If that's imperfect, then the rest of it's going to be imperfect. We haven't solved all of those issues, although we do it much better.

Moderator: Gentlemen, I know this audience could spend another several hours listening to your insight, your knowledge and experience as they prepare to take over the positions that you have recently vacated. So on behalf of our audience today, our Air Force Association, thanks so much for what you've done and thanks so much for being with us today. Please accept this small token of our appreciation as we depart. Thank you.

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