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**TRANSCRIPT OF INTERVIEW WITH
BRIG GEN CHRISTOPHER AZZANO
COMMANDER
AIR FORCE TEST CENTER**

**INTERVIEW CONDUCTED BY
STEPHANIE M. SMITH**

**AIR FORCE TEST CENTER
EDWARDS AFB, CA**

12 DECEMBER 2018

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**AIR FORCE TEST CENTER
EDWARDS AIR FORCE BASE, CALIFORNIA
AIR FORCE MATERIEL COMMAND
UNITED STATES AIR FORCE**

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Interview


with


Brigadier General Christopher P. Azzano,

Commander, Air Force Test Center

Edwards AFB, California

12 December 2018


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Narrator: Brig Gen Christopher P. Azzano, Commander, Air Force Test Center

Interviewer: Dr. Stephanie M. Smith, Chief Historian, AFTC

Date: 12 December 2018

Stephanie Smith: This is Dr. Stephanie Smith, Chief Historian, Edwards AFB speaking with Brig Gen Christopher Azzano, 12 December 2018. Sir, do I have your permission to make this recording.

Brig Gen Christopher Azzano: Yes, you do.

SS: Thank you so much. We have not had an interview yet, and some of the things I like to talk about are your goals, your vision, the initiatives you are looking to implement in this command.

CA: Test and evaluation forms the foundation of the Air Force Test Center. Most of our customers look to us and think of us in terms of the large programs that we execute. They think of us in terms of programs like the F-35, the KC-46, and the B-21. Of course, there will be other major programs in the future. However, we also test more than major airframes, including weapons, command and control systems, and other systems. We have to be ready to execute those programs today. In order to do that effectively, we have to have the right people, the right airspace, the right aircraft, and the right supporting resources, such as control rooms, security, and infrastructure. We also have to plan for tomorrow's programs. These might include things like hypersonic weapons, which we are rapidly developing. They might include new cyber capabilities to integrate with our current or future weapons systems. They might include space systems. We have to be ready to execute both today's programs and tomorrow's programs.

This involves a great deal of investment in our test and evaluation (T&E) infrastructure and capabilities. I have also found that in order to do this well, we require advocacy at many different levels. Some of that advocacy is internal to the Air Force Test Center, although I find that to be the easiest level of advocacy. Some of that advocacy takes place within in the Air Force Materiel Command. It occurs primarily with our customers, the System Program Offices (SPOs), so that they understand why we do things the way we do, how we add value in ways that might not be completely obvious, and to try to break down some of the misconceptions about the Air Force Test Center. That way, we're communicating the value of the Air Force Test Center, and the wide spectrum of value that we can provide customers. This is my second priority.

Finally, we must ensure that we have the right people to do the job. As much as we have focused on this lately, we're still experiencing problems, in particular with the hiring, development, and retention of the civilian workforce. This is probably my biggest resource challenge at the moment, and it is surprising that despite the fact that this has been an emphasis item in Air Force Materiel Command (AFMC) for quite a few years, we have not made much progress in many areas. We're taking action at the Air Force Test Center to address this problem right now.

One of my first actions since taking command of the Air Force Test Center, and one of the things that I will continue to do over the next few months, is emphasize the full spectrum of value that the Air Force Test Center can offer to our partners and customers. Often people think of the Air Force Test Center and associate us with the large test programs we execute. We can also offer expertise with advanced concept technology demonstrations. We work very well with the Air Force Research Laboratory. We have collaborative experience in experimentation with the Air Force Research Laboratory, Air Combat Command (ACC) and Air Force Special Operations Command (AFSOC). The Air Force Research Laboratory and the Air Force Test Center are already working on some projects together, and looking for other ways to collaborate in future. Experimentation is just the most recent example of our collaborative experience

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with other commands. Again, I'm concerned with communicating that full spectrum of value that the Air Force Test Center has to offer.

I'd also like us to stay as well integrated as possible with the end user. To that end, we work closely with the 53d Wing, which conducts operational test, and houses all the people and infrastructure to execute Initial Operational Test and Evaluation (IOT&E) on behalf of the Air Force Operational Test and Evaluation Center (AFOTEC). We also work a great deal with the end users in the space and the cyber realms as well. I certainly would like to see us to keep doing so, as it helps us communicate where we can add value.

In addition, I'm always looking for ways to communicate key test and evaluation principles to our senior Air Force leaders. We have experienced a significant impetus toward innovation and an emphasis on speed and agility. General David L. Goldfein, the Chief of Staff of the Air Force, and Secretary of the Air Force Heather Wilson introduced this in their vision for the Air Force several years ago. The first thing that struck me was that we have been doing this for years in the Air Force Test Center. It's part of our culture. We achieve speed and agility through exceptional risk management. Operational risk management is near and dear to our hearts. We approach it from a standpoint of safely executing something that has never been done before. We have experience with this primarily in the air domain, but also in the space and cyber realms. We have experience in testing speedily, safely, and productively. In terms of managing financial risk, we structure test programs to achieve maximum benefit at the lowest cost. We might use operational risk management to address programmatic risk. We might use it to structure a program to complete it as quickly as possible, so that we can sustain the advocacy that we need, or so that a particular program is ready for integration into a future system or architecture. We are quite good at risk management. It is fundamental to our culture, because we know what happens when we have allowed it to lapse. Anytime we execute test of something new, different, or unproven, we know that the stakes are high. That is something I've focused on as the Air Force Test Center commander, and will continue to do so.

We are also working on meeting the Chief of Staff of the Air Force's vision of multi-domain integration and command and control. I think of it in terms of operating in all domains and creating effects in the battlespace that integrates capabilities across all domains. We need to be able to test across all domains, as well. We're quite skilled at testing in the air domain, and we're building our expertise in testing in the cyber domain. We are now venturing into building on our past and our heritage in test in the space domain in a way that will help meet the current needs of the space community, especially since we see space beginning to evolve as a warfighting domain. Those are some of the projects I have been focusing on in my first months in command.

SS: One thing that I always wonder is, how is it different than you expected, or is there something that surprised you? You've been to Edwards Air Force Base numerous times, but it's different than being Ops Group commander.

CA: It really is, and also carries with it a heavy responsibility. I appreciate that more now that I'm in command. Now my job is not just ensuring test execution. It's about linking test and evaluation execution to our national defense strategy, the needs of our customers who support that strategy, and being aware of the environment. It's about being aware of the strategy and processes that our government uses,

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including bureaucratic processes that we rely on to plan for the evolution of the national security environment. It has been amazing to see how we have shifted our focus from relative low-intensity, counter-insurgency operations back to major, near-peer, or even peer competitors around the globe. This was brought to light when we began to see North Korea's ballistic missile program taking shape. We see evidence of it every day in our interactions with China and Russia. It also emerged in our national defense strategy, something Secretary of Defense James Mattis has been pushing very hard.* That rapid evolution, and rapid shifting of gears surprised me. We all knew the shift needed to take place, but I was surprised at how quickly it happened. The good news, and the reason I am so passionate about this topic, is I think we have a clearinghouse here in the Air Force Test Center for exactly the kinds of expertise that we need to accelerate operations to meet the national defense strategy. We know how to do that, and we're quite focused on that.

The other thing I mentioned already, is that everything we do is based on resourcing. Our most important resource is our people, and the fact that we still have a 130-day onboarding process for civilians astounds me. We have some expedited and direct hiring authorities. However, there are still a number of inefficiencies in the hiring process, and we are going to root those out. I told my team yesterday that with all the great and exciting things we're doing, I honestly think that we would celebrate with a high five if we could fix that one problem before I relinquish command.

SS: What kinds of things do you see coming for us in the next year or two, and what do you think we need to do to prepare for those?

CA: We have some exciting new programs coming. In addition to moving through initial operational test and evaluation (IOT&E) for the F-35 Joint Strike Fighter and preparing the KC-46 for operational test and evaluation (OT&E), test and evaluation of the B-21 will also take place at Edwards Air Force Base (AFB). The B-21 is an extensive program and will be the future of the bomber force for decades. We have to get it right. A contract for the Trainer-X (T-X) has been awarded, and we are in the process of building our test plans. We are helping the Cyber Resilience and Weapons Systems (CROWS) office meet Congressional mandates for improving our cyber resilience. We are reaching out to the space team. Maj. Gen. John E. Shaw, the deputy commander of Air Force Space Command (AFSPC), will visit the AFTC in January. Our objective is cross-talk and collaboration, so that we understand what AFSPC needs and he understands where the AFTC can help. AFSPC is venturing into a non-traditional method of acquisition based on the evolution of the space mission. They are taking on both offensive and defensive missions, with space as a contested domain. AFTC plans to help accomplish those objectives. That is not because AFTC has to be involved in everything. We do not have the resources for that. We plan to assist because we know that key skills reside in the test center that can help AFSPC achieve their goals more quickly. That is what we plan to communicate in January.

I would also like to highlight a program in which I see a great deal of potential and future payoff, the Joint Simulation Environment (JSE). The Joint Simulation Environment will integrate virtual and constructive complements into our current open architecture paradigm for testing and training. When we get the modeling and simulation aspects right, we will be able to create an environment that would never be

* (U) 26th Secretary of Defense James Mattis

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possible to create in the open-air test environment. We will be able to produce as close a replica of an enemy integrated air-defense system as possible. To develop the right modeling and simulation capabilities, integrate those models, and use them to prove the operational flight programs of aircraft, capabilities of missiles, cyber systems, or space systems, and potentially develop future concepts of operation is quite exciting. That mindset is also fairly aggressive, because we are years away from being able to achieve it, but I believe we as a military service and the Department of Defense must begin to incorporate that mindset now. That way, in 8, 10, or 12 years in the future we will achieve the Joint Simulation Environment's full potential. At the moment the F-35 in OT&E will be a baseline platform for Joint Simulation Environment, but we will be to expand beyond that initial platform. I have taken a direct interest in this project as well.

SS: That one to me just seems so big and all encompassing. It's not often that we take on something that has so much potential and has MILCON and the potential to touch every project.

CA: That's right. The Joint Simulation Environment will create a new environment that could form the foundation for the development of acquisition, test, and training for decades. It's that significant. There are many technical hurdles to accomplishing it, including enabling high-bandwidth communications, proper modeling and simulation techniques, latency, and the need to integrate the live, virtual, and constructive (LVC) components. The technical challenges are also significant. I often say that this may be an idea ahead of its time, but with the pace of technology acceleration, we may surprise ourselves at how quickly we achieve it. The AFTC must at least try to achieve that vision.

SS: We only have a few minutes left until your next meeting. What else would you think is important to for me to know, that perhaps we haven't talked about or I haven't asked you?

CA: We recently discussed fundamental truths at Air Force Materiel Command (AFMC). Lt. Gen. Robert D. McMurry, Jr., our current AFMC commander raised the question, asking what fundamental truths did we live by in each center? What is the culture of each center? What is the foundation of that culture and why? I spoke with a number of people upon my return, and reached back and thought about some of my own experiences. I finally formulated what I think are the three enduring principles for the Air Force Test Center. The first I've already mentioned, which is speed, innovation and relevance through world-class risk management. It's because of our risk management that we're able to execute more quickly. Our exceptional risk management allows us to turn out an exceptional product as safely and as quickly as possible. Any time as a nation we need to venture off into the unknown, the insight and wisdom of our testers working out these particular problems is just amazing. I think that is foundational. The other thing that I would say we are really good at is tailoring our teams and our products to meet the wide spectrum of acquisition, whether it's research and development, acquisition, advanced technology demonstrations (ATD), integrating an advanced technology demonstration into a system, integrating systems into platforms, or brainstorming future warfighting architectures. We are good at all of those, and we tailor our teams and products to suit them. I think that is also foundational. The third enduring principle is that while we do work with non-DoD entities, we most commonly support the warfighter. It is that relentless focus on the end user that enables us to deliver high-quality products and products that truly are relevant. That is foundational, and you will hear a lot more from me on that. I definitely intend to spread that message for internal consumption but also to our external customers.

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I think that's all I in terms of what I'd like to leave you with.

Telling our story, getting the Test Center involved, and having people think of the Test Center are important to me. I would love to have a MAJCOM commander with a thorny problem to solve think first of the Air Force Test Center and how we can help. I would love to have this be the first response. This will require continual engagement, in fact a continual battle rhythm of engagement, to help the key decision-makers understand the value that the Air Force Test Center brings.

SS: We in the History Office are often not included in the goal of explaining the value of DT&E—that often seems like a task for Dr. Jerome, or someone like that—but it's not just in terms of heritage but also the space study that we can help. When General Bunch was here as the center commander he wrote a preface for a study on deployed flight test that was done when he was wing commander. You can tell us to go to the AOR to do flight test and we'll do it. We won't have a closed range. We won't have any of our normal resources. We won't have a mission control room. But we'll still do flight test anywhere, anytime, anyplace. That's the kind of story that highlights the flexibility, skill, and expertise can we can offer. Hopefully our products can help not just with internal customers but with Command and beyond.

CA: When discussing directed energy, Air Force leaders often think of Air Force Research Laboratory. When they ask how the Air Force is going to improve readiness, they think of the Air Force Sustainment Center. I would love to have the Air Force Test Center come immediately to the mind of those trying to solve technology development and integration challenges. In some areas they do, in large part due to efforts by the preceding leadership include Lt. Gen. Arnold W. Bunch, Maj. Gen. David A. Harris, and many others. Not everyone has the Test Center on the tip of their tongue, however, and I would like to see that change.

SS: We can get there.

CA: We can with your help.

SS: Thank you so much.

CA: Thank you.

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