

## **Cyberspace Leadership**

Towards New Culture, Conduct, and Capabilities

Gen Kevin P. Chilton, USAF

## **Air-Mindedness**

Confessions of an Airpower Advocate

Lt Gen Robert J. Elder Jr., USAF, Retired

## **A Perfect Storm over Nuclear Weapons**

VADM Robert R. Monroe, USN, Retired

## **Recent US and Chinese Antisatellite Activities**

Lt Col James Mackey, USAF

## **Team Spirit**

A Case Study on the Value of Military Exercises as a Show  
of Force in the Aftermath of Combat Operations

Dr. John F. Farrell

## **Deterrence and Space-Based Missile Defense**

Lt Col Lorinda A. Frederick, USAF



# Efficiently Exploiting the Power of C4ISR by Optimally Organizing and Training the Producers of Combat Support Effects\*

Dr. Edward B. "Mel" Tomme, Lieutenant Colonel, USAF, Retired<sup>†</sup>

In a previous *Air and Space Power Journal* article, I argued for the existence of two distinct portions of the find/fix/track/target/engage/assess (F2T2EA) kill chain.<sup>1</sup> The targeting and engaging portions of the chain are the responsibility of *combat* assets specializing in the full spectrum of enemy-asset negation (denying, disrupting, deceiving, degrading, or destroying them, as appropriate). Although some combat assets can independently carry out the remaining portions of the kill chain, they typically are assisted by specialized *combat support* assets that provide the necessary intelligence, surveillance, and reconnaissance (ISR) wherewithal to get them into position to target and engage.

In my earlier article, I concluded that major commands (MAJCOM) should be organized by effect and that one of the most effective organizational restructurings would involve the consolidation of all air and space command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) assets under one commander. The discussion in that ar-

ticle was primarily theoretical, addressing why such a structure would prove more effective than the current one. The present article switches gears and deals with the practical organize-and-train aspects of that consolidation. Although incorporation of National Reconnaissance Office satellites under the same commander would be optimal, the previous article showed that political considerations would likely make that goal difficult to meet. Thus, this discussion concentrates solely on the reorganizing and training of organic Air Force units.

What would an effects-based Air Force C4ISR Command (AFC4ISRC) look like in practice? It would likely start by consolidating all of the existing Air Force ISR Agency (AFISRA) with almost all of Air Force Space Command (AFSPC), whose structure is currently in flux following the Corona meeting of October 2008.<sup>2</sup> Formerly, AFSPC primarily consisted of two numbered air forces and an in-house acquisitions arm. Following Corona, the numbered air force in charge of intercontinental ballistic missiles (ICBM) will move under the new, nuclear-focused

\*Editor's note: This article is a direct follow-on to the author's previous *Air and Space Power Journal* article entitled "Emphasizing Effect over Domain: Merging Three Organizations to Enhance the Efficacy of Our Nation's Intelligence Production" (Spring 2009, <http://www.airpower.au.af.mil/airchronicles/apj/apj09/spr09/tomme.html>). Dr. Tomme adapted the present article from his longer monograph *Expansion or Marginalization: How Effects-Based Organization Could Determine the Future of Air Force Space Command*, Research Paper 2008-1 (Maxwell AFB, AL: Air Force Research Institute, July 2008), [http://www.au.af.mil/au/aupress/ARI\\_Papers/Tomme%20AFRI%20Paper%202008-1.pdf](http://www.au.af.mil/au/aupress/ARI_Papers/Tomme%20AFRI%20Paper%202008-1.pdf).

<sup>†</sup>The author is a defense industry consultant. He retired in February 2006 as the only combat pilot in the Air Force with a doctorate in physics. He taught physics at the US Air Force Academy, where he became the only officer ever recognized as both the outstanding academy educator by the dean and the outstanding associate air officer commanding by the commandant. He finished his career as the deputy director of Air Force Tactical Exploitation of National Capabilities at Schriever AFB, Colorado.

Global Strike Command while the units and missions originally slated to go to a separate Cyber Command (AFCYBER) will now become the Twenty-fourth Air Force under AFSPC. These two developments are definitely steps in the direction of effects-based organization. The longer version of this article (see “editor’s note”) proposed both of them, though for different reasons than the ones that apparently spurred the reorganization at Corona. The key to organizing the new command entails explicitly identifying its function as support. Seen in this light, AFSPC’s absorption of the AFISRA or vice versa is irrelevant as long as the effects producers end up in the right relative positions in AFC4ISRC.

## Combat Support Is the Mission

The questions thus become, what are the right relative positions, and what portions of the two organizations should actually join? To answer those questions, we would find it instructive to look at how one of our sister services describes its own organization. The Army classifies its units under three different functional labels: *combat arms*, *combat support*, and *combat service support*, defining the terms as follows:

*Combat arms* are units and soldiers who close with and destroy enemy forces or provide firepower and destructive capabilities on the battlefield. . . . [Examples of these kinds of units include infantry, armor, and artillery.]

*Combat support* encompasses critical combat functions provided by units and soldiers, in conjunction with combat arms units and soldiers, to secure victory. . . . [Examples of these kinds of units include military police and military intelligence.]

The primary role of Army tactical [*combat service support*] units is to sustain Army forces. . . . [Examples of these kinds of units include finance, supply, and transportation.]<sup>3</sup>

The remainder of this article uses the term *warriors* to describe troops whose functions are similar to those of the Army’s combat arms units.

Although this article is not a call for branching troops like the Army does, if the Air Force classified its units in a similar manner, the new AFC4ISRC clearly would fall under the heading of combat support. It would neither contribute to sustaining troops nor fire shots in anger. Rather, the command would exist to support the warriors in the field. This distinction is critical because it is the warrior who establishes requirements, and it is the support troop’s function to respond to those requirements.

The proposed AFC4ISRC structure is inherently oriented toward combat support. AFSPC, however, has operated for 25 years with a split personality. A large portion of its tasks relates to combat support, but a significant minority of its functions is distinctly combat arms. Until recently, the ICBM force represented the most obvious of these functions. The October 2008 Corona action removed those combat arms forces from the core of what is essentially a combat support command. Presumably, the space-and-missiles assignment specialty code that currently joins these two distinct career specialties will separate again to allow better tracking of actual capability and experience: combat versus support.

Likewise, only a relatively small number of AFSPC personnel plan for actual space-on-space combat. These specialists in offensive and defensive counterspace are also, without a doubt, combat arms troops—warriors who do not belong in a support command. They are more logically grouped with Air Combat Command (ACC), the effects-based command that specializes in actually putting weapons on target. Under that new mantle, they would work with their brothers in arms to develop coordinated tactics to deal out destruction in even more effective ways. Removing them from the mix, were AFSPC and the AFISRA joined, would allow the newly formed AFC4ISRC to concentrate on becoming the premier supplier of C4ISR effects, a support function, to warriors across the Department of Defense and the intelligence community.

Similarly, a number of systems—including the U-2, RC-135, and all unarmed, unmanned aircraft systems—that currently reside within ACC performing purely support missions could much better serve the nation as part of AFC4ISRC. Already tasked with providing C4ISR support to the war fighter, these systems are assigned to a command whose mission is weapons delivery. Moving them to a command designed for the delivery of C4ISR effects would allow them to garner the budgetary attention they need; it would also permit single-commander oversight of the integration of the data they provide into a single, integrated database from which users could pull an overall picture of the battlespace appropriate to their needs.

The split-out of combat / combat support functions in the cyber world is a bit more on the gray side, the difference in many cases being the intent of the actions taken by cyber personnel. Cyber warriors may probe enemy defenses one day in a combat support function and then put on their combat hats the next day to conduct an actual attack. Some information operations functions are clearly combat related and belong in a combat command: computer network attack (CNA), computer network defense (CND), and computer network exploitation (CNE). Although one could argue that CNE is a combat support function, separating it from CNA/CND, in this case, would prove difficult because in some instances the same resources could be used to support all three activities. More frequently, we use other information operations functions such as electronic warfare, operations security, and psychological operations to influence enemy actions rather than deny them the use of their assets.

We don't have all airborne assets in the same command. Rather, we organize them according to the effect they provide. We should similarly apportion space assets according to effect. Such a structure runs counter to some recommendations in the Space Commission report that called for a near-complete segregation of space assets and personnel from the remainder of the

Air Force.<sup>4</sup> Conversely, that structure is quite compatible with the report's overall emphasis on developing space capabilities. The Air Force has recently become aware of some of the flaws in segregating space activities and is in the process of reintegrating them with the rest of the service. After having set up a high-profile operations directorate office for space on the Air Staff as a direct response to the Space Commission report, the Air Force recently closed that office and reassigned its space experts within the staff to facilitate better understanding of space throughout the organization.<sup>5</sup>

The new AFC4ISRC should have as its goal the production of a single, integrated picture of the battlespace, from the mud to the stars. One effect in particular should define the command's core competency: populating the battlespace with information and enabling timely command and control through robust communications channels that allow the picture to be used. Moreover, AFC4ISRC should make total consciousness its overarching goal. Warriors don't care where their information comes from. If they have target imagery when they need it, if they can talk when they want to, then they're happy and effective. They do not care whether their images come from a satellite or an unmanned aircraft system, whether they communicate via satellite link or fiber-optic cable, as long as credible and correct information arrives when they need it.

Gen Kevin Chilton, former AFSPC commander, has noted that one of the best counters to recent antisatellite tests is to acquire redundant C4ISR capabilities, both in space and in the air.<sup>6</sup> Lt Gen David Dep-tula, the Air Force deputy chief of staff for ISR, is adamant that "all the services buy systems that can feed common distribution pipes."<sup>7</sup> It is apparent that both of them seek to provide a seamless, transparent view of the battlespace to all users who need it. The most effective way to ensure that such an omniscient, deliverable picture exists would involve placing all the means of producing the picture, all the personnel

required to process and distribute it, and all the means of acquisition and delivery under a single commander who can assure that the disparate data streams play well together. General Deptula's vision for the AFISRA is proceeding along those lines. It won't take an extraordinary organizational leap to finish the job by merging AFSPC and the AFISRA.

## The Training of Combat Support Troops

No doubt, some people will resent being told they are not combat troops. The problem is not that we're now telling them they're *not* warriors; it began long ago when, in an attempt at inclusiveness, we began telling all Airmen they *were* warriors instead of leading them to *act like* warriors, to have a sense of urgency and a feeling of deep camaraderie, regardless of their actual function within the service. To cite an obvious example of the dilution of the word *warrior*, phrases like "trigger pullers"—the F2T2EA link is obvious—have entered the service's lexicon precisely to distinguish those who actually deliver combat effects from the rest of the Air Force's "warriors." Regardless of what we are called, each of us must understand what we do, what the importance of our job is, and where we actually fit in a structure designed to prevent and, when necessary, prosecute wars.

There is no shame in being a combat support or combat service support troop. As is evident in military organizations throughout history, the number of people who support frontline warriors far exceeds the number of warriors themselves. It is still possible to have the "warrior attitude" without actually being a warrior, and it is highly desirable to cultivate exactly such an attitude. Failure to *appropriately* cultivate that attitude creates problems, though. When people are told they are warriors long enough in an attempt to cultivate this attitude, many of them begin to believe that they are actually warriors instead of support troops with the

warrior attitude. They can easily lose sight of the mission of supporting warriors and responding to warrior needs. When support troops begin to believe that they set requirements instead of respond to them, then the tail attempts to wag the dog. The US Army's explicit division of functions into combat arms, combat support, and combat service support offers a much better way of delineating these differences than the current Air Force mind-set, which labels everyone a warrior. To generate a sense of pride and place in the conflict, the US Army focuses soldiers on their important role in fulfilling the mission.

Changing the way we develop combat support troops will help clarify these differences by properly identifying the dog and the tail; it will also allow much more effective delivery of support effects such as C4ISR. It's especially important for these troops to understand how the war is fought. We must avoid stovepiping by effectively cross-flowing officers between the different commands, thus ensuring that our combat troops spend time in the support fields so they understand their pain. Simultaneously, we must see to it that Airmen in the combat support specialties experience at least one tour of duty in a warrior command, actually taking part in combat-related activities, if possible. Such is not the currently preferred method.

The Space Commission report did not help on this front either. Its dictum to create a professional space cadre has been interpreted in such a way as to develop members of an even more insular corps who, in their quest for the ultimate technical competence, can spend an entire career shuttling between Colorado Springs, Colorado; Southern California; and perhaps Albuquerque, New Mexico, or Washington, DC.<sup>8</sup> Though certainly a good way to create a professional with extreme competence in the craft of space and inculcated with the technical culture of space, such a career does a disservice to the nation by minimizing that person's ability to understand and contribute fully to the larger function of national

defense. Only a very few AFSPC personnel below the grade of colonel ever get out to see the world and the people whom their space careers are designed to support—the very warriors who train in that world and sometimes die. As recently noted by one retired naval flag officer with extensive experience in the National Reconnaissance Office, “Only the Air Force defines space ‘operations’ as hands-on satellite command and control by uniformed personnel. The benefit of this ‘operational’ experience is questionable.”<sup>9</sup>

Senior Air Force space officers are close to recognizing and admitting to this problem. In a recent interview, Maj Gen Roger Burg, then the deputy director of operations for space on the Air Staff, discussed how “having a [separate] space office [in the Pentagon] meant that airmen coming from other backgrounds to the Air Staff did not have to learn about space because the questions did not cross their desks.”<sup>10</sup> A corollary of that statement with perhaps broader implication is that Airmen coming from space backgrounds do not have to learn about issues critical to the warriors they support because those questions did not cross *their* desks. “The Air Staff needs to be integrated,” Burg said in that interview.<sup>11</sup> But it is not only the Air Staff that needs integration. An essential part of the development of a truly useful space officer requires integration with, or at least intensive personal exposure to, combat arms units.

Unfortunately, integration is not a major focus of the current space-training mindset. Following the Space Commission’s recommendations, AFSPC would like nothing more than to take in young second lieutenants, provide them the appropriate training to work on the operations floor of a satellite squadron, and keep them in space-related billets within Fourteenth Air Force and the Space and Missiles Systems Center until a leader eventually rises to command AFSPC. The command is very proud of the fact that its officers deploy to theaters along with the rest of the Air Force.<sup>12</sup> However, many of them deploy to rear areas where they only

see how a combined air operations center (CAOC) works—not the end user’s needs for C4ISR support. A few months of casual exposure to CAOC-level combat operations offer a start, but not really the correct prescription to cure what ails the command.

The US Army has a better model, typically drawing its space operations officers from a pool of captains with seven to 10 years’ experience in a primary branch. Although not required by written policy, most Army space officers have experience in combat arms units along with command and staff experience.<sup>13</sup> Thus, they have a much bigger picture about why they provide their space support than do representative Air Force officers who were intentionally isolated in the space career field. Typically, they do not have their Air Force counterparts’ depth of knowledge in the day-to-day operation of satellites, but that is not generally their function. They exist to ensure that their bosses have an expert in their organizations who can advise them on what space can provide. It is their experience with space that makes them so useful to their units. It is their previous knowledge of combat operations that allows them to understand the true utility of their space experience.

The Air Force does have a much greater requirement for hands-on satellite operations. Admittedly, using the first one-third to one-half of officers’ careers to gain operational experience in the field with the warriors they will eventually support is probably excessive for Air Force needs. However, early in their careers, those young space professionals could profitably spend at least one tour down in the weeds with the operators they are destined to support. Their experience with warriors would make them even more valuable to their space units. Gen Lance Lord, former AFSPC commander, recognized the need for career broadening much earlier, noting that “the expeditionary nature of our service must extend to include all space professionals if we are to fully embrace and comprehend the complexities of joint warfare.”<sup>14</sup> Given the predominance of single-seat weapon systems

in the frontline combat arms role of the Air Force, which directly exposes only the pilot to tracking and engaging functions, more than likely a joint tour with the Army as an intelligence officer would offer the best way to obtain this kind of experience.

In addition to space officers, the proposed AFC4ISRC structure would include most of our intelligence troops. Unlike the development of space officers, the Air Force frequently assigns intelligence officers to frontline units early in their careers. In general, their career flow already exposes them to combat troops, letting them see the operations tempo and types of C4ISR support important to those forces.

The above discussion of how to develop a warrior attitude among space professionals harks back to the thoughts of many space force visionaries. One of the persistent themes of their writings, as well as one of the major themes of the Space Commission report, deals with the need for developing just such a warrior culture. Frequently drawing an analogy with the development of a unique air-warrior culture in the early years of the Army Air Corps, some writers implicitly or explicitly extrapolate the similar development of a unique space-warrior culture.<sup>15</sup> However, that analogy does not truly apply since it implicitly assumes conditions that do not actually exist.

Development of the air-warrior culture directly resulted from the shared threat of death or injury at the hands of the enemy. That condition does not exist among space professionals at a rate much greater than the one characteristic of the American population as a whole. By and large, space professionals inhabit a shift-work office environment where military members are surrounded and frequently outnumbered by contractor support. The esprit de corps required for the development of a warrior culture does not flourish in such an environment, at least not the kind of camaraderie experienced by warriors bound by the common experience of mortal combat or even of training that can be almost as deadly as combat itself.

Certainly, in some situations, space professionals work long, hard hours directly supporting a critical operation to save warrior lives—perhaps maneuvering a critical communications satellite into position so it can pick up the load from an overtasked asset. However, such action is not the norm. For the most part, these officers go back home to their families and lawns every day, even in wartime, never giving much thought to the possibility that their jobs may require the ultimate sacrifice at any time. In my personal experience, developing esprit de corps is much more problematic in an office environment than in an operational unit. These comments are not meant as a criticism—it is not the job of space officers, or of most other combat support specialties, to routinely put their lives on the line for their country. I mention the subject only to point out a critical and perhaps fatal impediment to the development of the warrior culture so desperately hoped for by space force advocates.

A wry smile seems an almost ubiquitous fixture on those officers who, having accumulated extensive experience in a “warrior command,” find themselves assigned to AFSPC and are then told how maneuvering their satellites makes them warriors. If more officers in the command actually experienced duty in combat operations, there would be no need for this section of this article. In my experience, the years spent as a warrior did not mark the pinnacle of my career; rather, I felt that I made my greatest contributions during my time in AFSPC delivering program after space-related program designed to keep warriors from dying needlessly. I was a support troop, and I knew it; however, my previous experience as a warrior allowed me to understand why my support was so important to the much bigger picture. A cross-cultural training program that exposes these officers to combat arms officers in the field, as outlined above, will go a long way toward allowing the space professional to gain such a perspective.

## Conclusion

An effects-based way to integrate the three existing organizational domains of space, air, and cyberspace involves separating shooters and nonshooters, regardless of domain, thereby gaining synergies from organizing, training, and equipping the producers of combat effects and the producers of combat support effects in only two organizational locations. Essential to this reorganization, the training of all of our support troops needs to include close contact with warriors so they have a better understanding of why their support is so important and how it is actually used in the field. This separation of effects and training goals also transforms support troops' culture and mind-set, helping execute the broader mission by clearly distinguishing between the supporting and supported functions. Such a system

would also minimize (by almost a factor of two) the overhead money required to set up MAJCOMs that organize, train, and equip; instead of ACC, AFSPC, AFCYBER, and the AFISRA, we would now fund only a combat command and a combat support command.

A completely clean break between combat effects and combat support effects will never occur. However, separating functions on the basis of effects as much as possible can only lead to significant efficiencies in training for and prosecuting military actions in support of attaining national objectives. Focusing on effects instead of domain and exposing support officers to warriors through cross-flow assignments early in their careers will certainly enable the even more effective support that is surely the goal of all of us on the team. ✪

Colorado Springs, Colorado

---

## Notes

1. Dr. Edward B. "Mel" Tomme, "Emphasizing Effect over Domain: Merging Three Organizations to Enhance the Efficacy of Our Nation's Intelligence Production," *Air and Space Power Journal* 23, no. 1 (Spring 2009): 83–92, <http://www.airpower.au.af.mil/airchronicles/apj/apj09/spr09/tomme.html> (accessed 30 April 2009).

2. "Air Force Senior Leaders Take Up Key Decisions," Air Force News Service, 7 October 2008, <http://www.af.mil/news/story.asp?id=123118700> (accessed 10 October 2008).

3. US Army Field Manual 3-90, *Tactics*, 4 July 2001, A-2, A-8, A-11, [http://sill-www.army.mil/bolc2/FM%203-90%20\(Tactics\).pdf](http://sill-www.army.mil/bolc2/FM%203-90%20(Tactics).pdf) (accessed 25 February 2008).

4. Donald H. Rumsfeld et al., *Report of the Commission to Assess United States National Security Space Management and Organization* (Washington, DC: The Commission, 11 January 2001), xxxiv, 89–90, <http://www.dod.mil/pubs/Space20010111.html> (accessed 25 February 2008).

5. Bruce Rolfsen, "USAF Merges Air, Space Ops Offices," *Defense News.com*, 6 August 2007, <http://integrator.hanscom.af.mil/2007/August/08092007/08092007-19.htm> (accessed 25 February 2008).

6. John A. Tirpak, "Chinese Nerve," *Air Force Magazine Online Daily Report*, 26 September 2007,

<http://www.airforce-magazine.com/DRArchive/Pages/default.aspx> (accessed 25 February 2008).

7. John A. Tirpak, "The Big Squeeze," *Air Force Magazine* 90, no. 10 (October 2007): 32, <http://www.airforce-magazine.com/MagazineArchive/Pages/2007/October%202007/1007squeeze.aspx> (accessed 25 February 2008).

8. Rumsfeld, *Report of the Commission*, 42–47.

9. Rear Adm Tom Betterton, USN, retired, personal communication with the author, 13 November 2007.

10. Rolfsen, "USAF Merges."

11. *Ibid.*

12. Gen Kevin P. Chilton (speech, 232nd Army Birthday Ball, Colorado Springs, CO, 16 June 2007), <http://www.afspc.af.mil/library/speeches/speech.asp?id=333> (accessed 25 February 2008); Lt Gen Frank G. Klotz (speech, National Defense University breakfast, Capitol Hill Club, Washington, DC [ca. 2007]), <http://www.afspc.af.mil/library/speeches/speech.asp?id=246> (accessed 25 February 2008); and Col Richard White (speech, 5th Responsive Space Conference, Los Angeles, 25 April 2007).

13. Maj Aaron Luck, Army space operations officer, personal communication with the author, 1 August 2007; and Lt Gen Larry J. Dodgen, "Army Cadre Ensure Security of Vertical Battlefield," *High Frontier* 1,

no.1 (Summer 2004): 15–17, <http://www.afspc.af.mil/shared/media/document/AFD-070622-055.pdf> (accessed 25 February 2008).

14. Gen Lance W. Lord, "Space Support to the Warfighter," *High Frontier* 1, no. 4 (2006): 3, <http://www.afspc.af.mil/shared/media/document/AFD-070622-058.pdf> (accessed 25 February 2008).

15. Col Bruce M. DeBlois, ed., *Beyond the Paths of Heaven: The Emergence of Space Power Thought* (Maxwell AFB, AL: Air University Press, 1999), [http://www.au.af.mil/au/aupress/Indexes/author\\_ndx\\_bks.htm#D](http://www.au.af.mil/au/aupress/Indexes/author_ndx_bks.htm#D) (accessed 25 February 2008); Maj Gen Richard E. Webber, "In Search of a Space Culture," *High Frontier* 4, no. 1 (November 2007): 14–16, <http://www.afspc.af.mil/shared/media/document/AFD-071119-017.pdf> (accessed

25 February 2008); Col J. Kevin McLaughlin and Col Chris D. Crawford, "Forward to the Future: A Roadmap for Air Force Space (Part I)," *High Frontier* 3, no. 4 (August 2007): 23–31, <http://www.afspc.af.mil/shared/media/document/AFD-070814-023.pdf> (accessed 25 February 2008); Col J. Kevin McLaughlin and Col Chris D. Crawford, "Forward to the Future: A Roadmap for Air Force Space (Part II)," *High Frontier* 4, no. 1 (November 2007): 27–34, <http://www.afspc.af.mil/shared/media/document/AFD-071119-017.pdf> (accessed 25 February 2008); and Hon. Peter B. Teets, "Shaping Space Activities to Secure America's Future" (speech, Air Force Association National Symposium, Los Angeles, 15 November 2002), <http://www.afa.org/AEF/pub/teets1102.asp> (accessed 25 February 2008).

# AIR & SPACE POWER JOURNAL

## Free Electronic Subscriptions

You can subscribe to the online versions of all six  
*Air and Space Power Journal* language editions at

**<http://www.af.mil/subscribe>.**

We will then send you quarterly e-mail messages with links  
to the articles in each new issue.