Aerial Composite Employment Wings in Joint All-Domain Operations

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Since the Gulf War, the United States has seen itself as the world's sole superpower—militarily, economically, and diplomatically. Political pressures at home and the Global War on Terror, however, have stagnated the development and training of the US military to execute major contested operations. During this time, the People's Republic of China (PRC) has used the military atrophy of the US to its advantage, developing massive arsenals of anti-access/area-denial (A2/AD) weapons comprised of advanced surface-to-air missiles and surface-to-surface missiles.

Additionally, the People's Liberation Army (PLA) has achieved major milestones in cyber warfare, antisatellite capabilities, and nuclear delivery platforms that present significant challenges to the United States on the high seas, in the air, in space, and in cyberspace.[1] These advancements pose existential dangers to the current paradigm that the US Air Force uses to fight. The current system consists of air operation centers (AOCs) that provide air tasking orders and higher-echelon intelligence down to air expeditionary wings (AEWs). These wings are comprised of squadrons not normally stationed together, and they do not make major operational military decisions but rely on air tasking orders from the AOCs. This system is heavily reliant upon a center of command that requires uncontested dominance in communication, space, and cyberspace while giving AEWs little operational and command autonomy.

The United States is not historically unfamiliar with conflict in the Indo-Pacific theater, but the geography of the region requires a strong logistics and communication network to sustain modern combat operations. The capabilities of the PLA in a 2030 scenario present a massive threat to the current US logistical and command and control (C2) paradigm. This paradigm is best exemplified in a potential military conflict in the Formosa Straits in a clash between the United States and China over the independence of Taiwan (Republic of China), an American partner.

The distance between Taiwan and the United States is more than 5,600 miles, while the distance between the PRC and Taiwan is a mere 100 miles. In between Taiwan and the United States lies the world's largest ocean with a smattering of

small atolls and islands, requiring a strong naval and air presence to create interior lines.[2] The Chinese have no need for vast, long-distance naval and aerial logistical capabilities as they would be fighting on their "home turf." They have leveraged what was historically considered a geographic advantage to the United States—isolation—and turned it on its head.

By creating an arsenal of newly developed A2/AD weapons, China could deny any external logistical resupply required for sustained US military operations and even isolate combat forces themselves. Combined with rapid advancements in cyber, electronic-magnetic spectrum, and space warfare, the Chinese could likely interrupt or destroy any traditional, long-range communication ability from war-fighting units to higher commands. All these factors render the current combat construct of AOC-to-AEW organization in the Air Force obsolete and incapable of fighting a war in the Indo-Pacific theater as well as anywhere else the US faces an advanced adversary across an ocean. Thus the Air Force requires, in addition to technological advances, a new organizational model to win in the Indo-Pacific and around the world—a model that can operate in isolation and independently, both logistically and with regard to C2, for short to intermediate periods of time.

The Solution

As argued in "JADC2 in Distributed Operations," the solution to the aforementioned problem resides in organization at the wing level.[3] Wing commanders must be enabled to make decisions isolated from the AOC. This capability requires self-sufficient staff programs to develop, target, and prosecute objectives at the wing level that interpret the Joint Forces air component commander's intent for days at a time rather than rely solely on orders from the AOC.[4]

Where this article will direct its focus, however, is in the actual renovation of the wing construct. Such an organizational overhaul cannot be implemented overnight and carries significant financial, political, and organizational implications. The Air Force must create standalone wings that are organic AEWs—self-contained and able to execute full missions independently. These wings can no longer afford to be separated by mission type or singular platform—fighter, bomber, cyber, airlift, and so forth—for their purpose will be to execute the missions independently across Joint all-domain operations (JADO).

These standalone wings would be comprised of multiple squadrons of each type—fighters, bombers, tankers, electronic warfare, cyber operations, and any other capability needed to win indigenously. This new reorganization would harken to the legacy of composite wings in the Air Force but would facilitate the new doctrine of Agile Combat Employment, and as such, this article proposes these independent wings be called aerial composite employment wings (ACE) Wings.

A crucial element of success in JADO is integration—the ability to work in concert across all the domains, maximizing the effects of each platform and mission to achieve the desired effects.[5] Integration success requires two elements: the interaction of parties and practice.

The Air Force is comprised of lethal professionals who train to be excellent at their tradecraft, but currently, most war fighters operate in a vacuum day-to-day. Fighter pilots typically fly sorties with their similar type of aircraft, cyber officers operate at bases with no kinetic or tactical aircraft, and tankers often fulfill taskings with no regard to a bigger mission or identity with the airframes they refuel. These interactions happen daily at only one base in the US—Nellis Air Force Base (AFB), Nevada, at the weapons instructor course. Additionally, Nellis AFB hosts the infamous Red Flag large force exercise (LFE), which occurs three times a year and lasts for two to three weeks. Eielson AFB, Alaska, also hosts a similar Red Flag-style LFE for a few occurrences during the year.

These exercises include select units and result in each combat air force (CAF) squadron, on average, attending one such LFE once a year. Thus, most CAF war fighters may only spend two to three weeks truly interacting with different platforms and understanding their counterparts' capabilities, tactical concerns, and the difficulty and/or necessity of successful integration to modern war fighting. This paradigm presents a massive problem in a modern war where integration is crucial to victory. It places a few weapons instructor course graduates (one or two per squadron) as subject matter experts in integration and gives the remaining officers, potentially, only three or four sorties annually focused on integration.

Aerial composite employment wings would put integration at the core of a unit's identity. It would enable daily LFEs as a part of routine training, and each sortie would facilitate face-to-face interactions and foster professional relationships, invaluable to the Air Force and military as a whole. The integration would enable the tactical development of integration to begin as a grassroots movement from multiple bases, instead of solely at Nellis AFB.

These wings would create environments ripe for innovation, and their quantity would force any foreign intelligence agency to monitor multiple locations simultaneously to collect on American tactical development, making effective collection very difficult. Wing agencies would train to create and perfect the intelligence and air, space, and information operations functions required of a wing isolated from the AOC in a distributed JADO-contested fight.[6] Wing commander intelligence requirements would inherently focus on multidomain problems and associated solutions. Wing commanders would be given constant practice at leading and managing different platforms and warfare across all domains.

In addition to the clear benefits of integration in these composite wings, there are also intangible second- and third-order positive effects. The most beneficial of these would be esprit de corps: a wing's identity would no longer rely, solely, on one part of the mission, but rather the whole. This identity would produce air-minded officers and Airmen across every Air Force specialty code who understand their role and importance in JADO by witnessing integration on a regular basis.

Current AEWs are a collective of various squadrons and platforms assembled from bases across the nation that require months of external major command and combatant command planning. Commanders are typically operators from one of the platforms in the AEW but not typically from a base where one of the expeditionary squadrons originated. This situation leaves the AEW with no real attachment or rapport with their commander and little experience for the wing commander leading various platforms incorporated into the wing until actual deployment.

The logistical capability is all external; a combat air force AEW has no indigenous airlift or tanker assets. To get any localized logistical support, a unit within the AEW must go all the way up to the AOC or interact through a major command or combatant command, a process opposite of being decentralized. To fulfill taskings in the Pacific or any other theater where the adversary possesses long-range strike ordnance, tankers will be required. Currently, without contact to the AOC, any combat air force AEW cannot requisition tankers.

An ACE wing would be completely self-sufficient for short-to-intermediate periods of time. Wing commanders would be able to use their composite capabilities to their advantage should external logistical and communication lines be cut off. Using the last known standing orders and Joint Force commander's intent regarding a geographic area, ACE wings could operate like a submarine in the Pacific in World War II, pursuing the enemy and achieving objectives with autonomy and little support for days to weeks on end. This capability would be practiced and refined so that the loss of communication with higher command would almost be a negligible factor, countering the enemy's capabilities.

Wing commanders would have the ability to approve the use of indigenous logistical assets such as a squadron of KC-135s assigned to the ACE wing to achieve mission success without ever having to request authority from high command. In addition to these tactical and operational advantages, these ACE wings would be an ideal strategic tool as deployable quick-reaction forces for use by the national command authority to handle rapidly developing situations.[7] These units could be deployed with minimal external support to prepositioned forward arming and refueling points or forward operating bases.[8] These wings would be the Air Force's answer to units such as Naval fleets, Marine expeditionary units, or

Army combat brigade teams—cohesive units able to respond and deploy as one team to achieve JADO effects.

The Challenges

While the ACE wing concept is filled with inherent advantages, apparent and otherwise, there are arguments that detractors have used to defeat the composite wing concept in the past. The most obvious of these complexities, particularly in an ever-political environment, is the cost. ACE wings will require vast base infrastructure revision and creation, not to mention logistical issues concerning moving units to bases. This is, ultimately, why the last experiment with a composite wing in Mountain Home AFB, Idaho, during the 1990s was disbanded. According to then USAF Chief of Staff General Merrill McPeak, "the reason we haven't done such a thing [formed composite wings] over the years is that we have been afraid of costs. . . . It is expensive, especially if you create intermediate-level maintenance organizations on each base where you have a composite wing so organized."[9]

The cost estimated to create such a composite wing at Moody AFB, Georgia, in 1993, was $34 million, which is approximately $64 million in 2020, accounting for inflation. The estimates vary from base to base. For example, Pope AFB, North Carolina, needed $43.3 million for the composite wing initially, but an additional $45.6 million was required to rebase the C-130s originally residing there. Meanwhile, Mountain Home AFB's composite wing cost estimate was only $26.9 million in 1993 but had no requirement to dislocate groups or wings initially stationed there.[10]

This situation means the average cost for setting up a composite wing, accounting for 2020 inflation, would be about $56.2 million. This estimate assumes not dislocating a platform like the model of Pope AFB, which would increase costs drastically to $160 million. This initial price tag is seemingly costly; however, it must be taken in context. Currently, a single F-35 will cost the US government $81.4 million.[11] A more convincing comparison is the Department of Defense (DOD) fiscal year (FY) 2020 budget, which allocated $622.4 million in LFEs across the entire military for just one year.[12] With that amount of money, the Air Force could create up to 11 ACE wings that would then use normal FY operational and maintenance funding to fly daily LFEs and achieve all the benefits previously described.

Although cost is the most common and the greatest obstacle facing the establishment of ACE wings, logistics and capacity present their own challenges. Nellis AFB and Eielson AFB can perform massive LFEs due to their access to vast training ranges and airspace such as the Nevada Test and Training Range. Nellis

AFB also boasts proximity to the Joint training centers of Fort Irwin, California, and the Navy's test centers in Naval Air Station China Lake, California. This proximity to other bases enables further Joint integration training.

Any base for consideration would need to be in a location that has relatively close access to similar range complexes. The following range areas might suffice: White Sands Missile Range, Barry Goldwater Range, Mountain Home Range Complex, Utah Test and Training Complex, as well as any of the warning areas located off the US coast. These areas limit base locations to coastal areas or the Western desert areas of the United States.

Additionally, a political challenge is selecting bases that do not currently have fighter jets, as residents of major populated areas are known to complain about the noise produced by afterburning jets. This fact further complicates the limited selection, as does the fact that many of the training wings producing America's newest fighter pilots also require significant range access and occupy some of those optimal bases, competing with any unit jockeying for air and ramp space.

These are just the flying concerns, as JADO also requires space and cyber assets be included and integral to these ACE wings. The infrastructure required to create tactical and operational cyber squadrons is likely highly classified and expensive. An additional second-order effect stemming from the logistics challenges of the ACE wing construct is the professional development and cultural ramifications to Airmen and officers. Air expeditionary wing commanders have typically been fighter pilots, and it is not illogical to see that as a potential route of cultural inertia, particularly in the initial years. This trend could give the political appearance of a "glass ceiling" to other career fields or favoritism by the wing commanders for fighter pilots over other Airmen, potentially limiting career opportunities and positions such as school and command.

While this may be a perception, it should be noted that in previous examples of composite force bases such as Seymour Johnson AFB, North Carolina, tanker pilots felt the fighter wing commander "[made] selections without regard to tankers or fighters. He pick[ed] the best person."[13] Success in this department depends on strong and fair leadership to ensure a meritocracy independent of career field, as does the whole of the Air Force.

The Implementation

The challenges presented by the creation of ACE wings must be viewed in the context of the challenge presented by the threat of near-peer adversaries far from the shores of the United States in 2030. Failure to change our paradigm due to cost or to political or cultural challenges presents the very real opportunity to lose a major war in the Pacific or elsewhere, with serious ramifications for the Ameri-

can way of life. The solution needs to be based in reality and balanced with the drawbacks.

One solution would be to create four ACE wings by syphoning funds from LFEs during the course of four years. The ideal location to start could be Mountain Home AFB, Idaho, as it has historical significance being the previous location of composite wing formation, ease of access to the Mountain Home Range Complex, and reasonable distance from Joint partners at Whidbey Island Naval Air Station and the I Corps at Fort Lewis, both in neighboring Washington State.

Ideally, it would be comprised of at least one squadron of each of the following platforms: F-15E, F-35, B-1, KC-135, MQ-9, and C-130. In its operations group, it would contain a cyber operations squadron and an air control squadron fully integrated and working regularly with the operational aviators. The wing would contain a staff structure much like that of an AOC, ultimately being led by a brigadier general as the commander. This concept could be instituted additionally at bases such as Shaw AFB, South Carolina, Tyndall AFB, Florida, and Hill AFB, Utah, among others due to their similar strengths.

To minimize cost, bases should be selected that currently have an airframe that is desired to be integrated within the specific ACE construct to avoid a Pope AFB-style relocation cost. Vicinity to Joint units is also necessary; to be successful in JADO, these wings must be able to train and integrate on a routine basis with naval and land forces. The self-sufficiency of these units enables commanders to interact directly with their local service counterparts to create Joint training exercises and build strong relationships across the different services.

Conclusion

Modern warfare against a near-peer adversary such as China will require integration and decentralization. The ACE wing model presents a possible solution to the organizational challenges posed as the US military prepares for a possible conflict requiring JADO in 2030. The proposal maximizes deployment ability, training, integration, and autonomy. It is not without drawbacks; cost and logistics are a major factor in the challenges and opposition such a concept would face. But the existential threat the country may face in the future requires monetary and organizational investment, and the cost to build four ACE wings varies from potentially less than the price of four F-35s to as much as the DOD spends on LFEs across the force in a single year.

This initial investment is worth the benefits. The ACE wing model would foster tactical and operational innovation from the squadron up across multiple nodes by having daily exercises equivalent to major, semiannual LFEs across all

domains. These wings would create and foster relationships across career fields in all domains, engendering awareness of counterparts' strengths, concerns, and weaknesses. Additionally, this construct would create effective commanders able to deploy their units and operate on a moment's notice with the capability and experience to lead in JADO. Notably, in the history of airpower, there is not a single example of a composite wing that was unable to meet its mission objectives or operate below the standard expected of it.[14] This reorganization would put the war-fighting capability directly back into the hands of those who have innovated and won throughout the history of American airpower—the squadrons, groups, and wings.

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Notes

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