Achieving a Cost-Effective Balance in the Department of Defense

Concurrent and Proportional Recapitalization of the Air National Guard

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When Desert Storm kicked off, we had some great capability within the Air National Guard and the A-7 platform. But the active duty [Air Force] was not flying the A-7, and they were concerned with getting the top-of-the-line weapons in the fight, and we were not asked to participate. That seems to me to be a great waste of money. It makes no sense to have a platform that you're not going to use in war.

—Lt Gen Harry Wyatt
Director, Air National Guard
29 July 2009

The Department of Defense (DOD) is engaged in the final stages of its Quadrennial Defense Review (QDR), during which it seeks to identify likely national security challenges and associated response options to better guide future US defense investments. Each service has worked tirelessly to justify and advocate programs that pursue US strategic aims. For the Air Force, the primary goals have included rebalancing the force to increase competencies in irregular warfare and reinvigorating its nuclear enterprise.[1] Through these efforts, the Air Force seeks to better contribute to ongoing conflicts in Iraq and Afghanistan and increase the effectiveness of the US nuclear deterrent.

Strategy is an art of making choices among exclusive options, and the Air Force is developing a strategy to manage tradeoffs in traditional strengths to enable growth in new areas.[2] Today's zero-sum fiscal environment makes such actions difficult. The debate surrounding the structure of the Air Force's current fighter force provides a prominent example of a traditional strength's receiving attention as a likely "bill payer" due to perceived limitations in today's counterinsurgency conflicts. Current decision makers, however, have created a false dichotomy. Freeing resources for emerging mission sets does not necessarily have to come at the expense of the future structure of the fighter force—if the Air Force can maintain the structure in a more efficient manner. By leveraging and investing in the proven, cost-effective Air National Guard (ANG), the Air Force can realize these efficiencies.[3]

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Thirty percent of the Air Force's current fighter fleet resides in the ANG, which maintains the majority of air sovereignty alert (ASA) sites, 24 hours a day, 365 days a year, sitting ground alert and patrolling the skies above the United States, tracking potentially hostile targets and other targets of interest, including civilian aircraft in distress.[4] Additionally, ANG fighter units execute deployed missions as full partners in the air and space expeditionary force. ANG aircraft, however, are the oldest in the fighter fleet and among the last scheduled for replacement with fifth-generation fighters like the F-35.[5] Thus, the ANG shoulders the majority of institutional risk of losing aircraft with the consequent loss of capability and relevance. Without a change in the recapitalization plan, the Air Force stands to lose a majority of the most cost-effective portion of its fighter portfolio, with an associated loss in capability. This article presents a solution by means of concurrent and proportional recapitalization of ANG resources.

The Fighter Gap Debate

Grounded in the trade-off discussion above, one debate focuses on the sufficiency of the current fighter force to meet national objectives. The terms *fighter gap* or *fighter bathtub* represent the difference between the fighters the nation needs (to execute its strategy) and those it will have in the future.[6] Three primary variables govern the existence and/or extent of the fighter gap: the fighter requirement, the efficacy of the existing fleet, and the procurement plan for replacement aircraft.

Ultimately, the national military strategy and force-planning construct determine our fighter requirements. The impending QDR will inform both of these. Framing the debate is the fundamental question of how many fighters the United States needs to fulfill its strategic objectives. Notwithstanding Secretary of Defense Robert Gates's comments on the *quality* of the emerging fighter fleet, many factors affect this question, chief among them the *quantity* of fighters needed to execute existing operational plans, the steady-state security posture, and ASA operations. Although most people agree that the new fighter requirement will decrease, they differ on the necessary level.[7] The Air Force's obligation to prepare for two simultaneous major combat operations (MCO) is among the principal considerations for emerging strategic guidance.[8] Further influencing reductions in the fighter force are assumptions that we are not likely to conduct even a single MCO against a conventional force and that improvements will make each aircraft more capable.[9]

Current US plans maintain that we must have 2,250 fighters to avoid a high-risk scenario, based on Air Force assets supporting two MCOs.[10] The current QDR *may* replace the two-MCO construct, but with no definitive guidance to the contrary, we retain the assumption that two MCOs will continue to drive fighter requirements. However, acknowledging strategic uncertainties and the fact that newer aircraft will enjoy increased capabilities and efficiencies, we assume that the nation does not incur high risk until the force structure falls 20 percent below the currently defined requirement. Therefore, we assume that the Air Force's fighter needs lie between 1,800 and 2,250 aircraft.[11] As demonstrated later, however, even a substantial reduction in overall fighter requirements will not significantly alter the existence or magnitude of a capability gap for the ANG.

With the need defined, the next question becomes how long our current fleet will last. Although each type of fighter aircraft has an advertised service life measured in hours, several factors complicate the process of defining actual life expectancy. The first is knowledge that service life determined by the vendor or system program office is not a "magic number" beyond which the aircraft will cease to exist. Rather, the number represents that point at which the engineering community expects the average aircraft to require expensive physical overhauls such as bulkhead replacements

and wing changes. Risk planners should therefore think of service life as an economic threshold beyond which the costs of maintaining and refurbishing an aircraft will exceed the expected value of doing so.

Most readers will have faced a similar dilemma when deciding to replace an old car. In many scenarios, owners stare at a six-digit odometer and weigh the expected costs and benefits of keeping the old car versus purchasing a new one. Sometimes—if the car stops working, for example—they have no choice. Facing a huge repair bill, owners decide that a newer, more reliable vehicle is the best use of their money. Without a breakdown scenario, they must rely on the best advice of their mechanics to compare the expected costs of maintaining the vehicle with those of purchasing a new one.

The discussion of service life becomes more complicated when we acknowledge that many fighter aircraft operate at variance with the engineering assumptions about service life. For that reason, planners and system program offices apply correction factors to original estimates that translate actual flying hours (AFH) into equivalent flying hours (EFH). Again, the car analogy is useful in demonstrating this concept. All of us are familiar with used-car literature that advertises a high-mileage car as having "highway miles," a claim that attempts to communicate to the would-be buyer that the vehicle is in better condition than one would judge, based solely on the odometer. Although the regression methods used to derive the relationship between AFH and EFH lie beyond the scope of this article, EFH is a more reliable indicator of actual aircraft age and thus emerges as the best predictor of aircraft age-out. Therefore, the authors use EFH in this article as the primary indicator of aircraft age.[12]

The number and rate at which the service receives new aircraft constitute the final variable that defines the fighter gap issue. The total number of aircraft purchased is an important variable in the long term. In the near term, however, the procurement rate becomes the critical factor in determining the existence and magnitude of a capability gap. We assume no change in the current F-35 procurement schedule—1,763 aircraft at a rate of 80 per year starting in 2015, with deliveries beginning in 2017.

Assumptions for the three major variables described above (requirement, service life, and procurement) prove useful in illustrating the Air Force's current fighter structure (fig. 1). The upper horizontal line indicates the currently stated requirement of 2,250 aircraft, and the lower horizontal line indicates the 20 percent reduction (1,800), mentioned above. This figure illustrates that the service has done an admirable job of mitigating risk in the near term and faces only a minor capability gap beyond 2024.

But figure 1 does not show how the major variables affect the ANG's fighter portfolio. Using the same assumptions, we consider the ANG's fighter force structure (fig. 2). Here, the light area represents existing legacy or fourth-generation aircraft (A-10s, F-15s, F-16s), and the dark area depicts existing and projected fifth-generation aircraft (F-22s and F-35s). Fielding plans for the F-35, which recapitalize six active component (AC) wings (with 72 aircraft each) before recapitalizing the first ANG squadron in 2019, have a significant effect on the figure's dark area.[13] Significantly, the illustration assumes that as active units receive F-35s, their newer F-16s (primarily block 40 and 50 variants) will cascade down to the ANG to recapitalize older aircraft.

Figure 2 indicates an ANG fighter gap beginning in 2010 and becoming more pronounced through 2015–16, when newer legacy aircraft arrive from recapitalized AC units. The fact that the ANG operates the large majority of the oldest Air Force fighter aircraft accounts for the drastic difference between figures 1 and 2. Following the current Air Force recapitalization plan, which calls for the AC to realize almost 500 F-35s before the ANG sees its first one, means that the legacy fighter force will age out prior to the fielding of a replacement aircraft. For the ANG, therefore, the fighter gap becomes a scenario wherein it will retire aircraft due

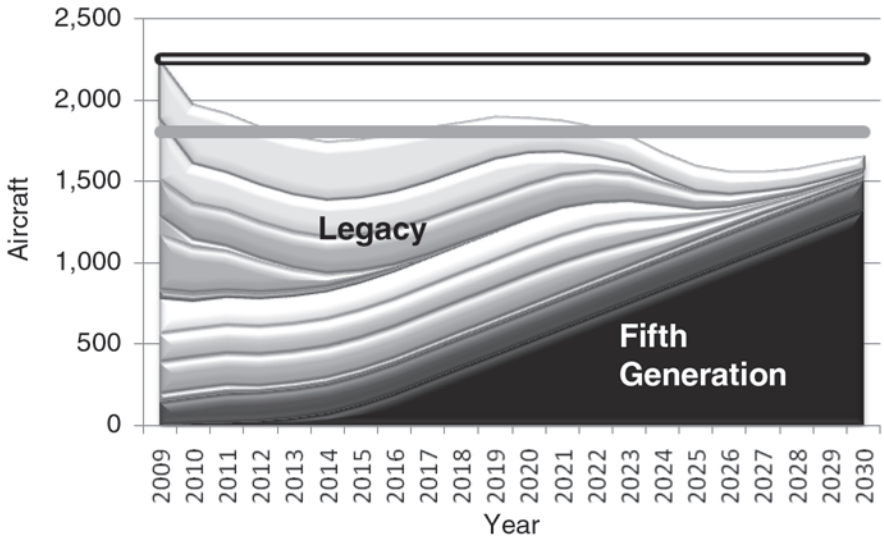

Figure 1. Structure of the Air Force's fighter force. Data on aircraft age is based on the Reliability and Maintainability Information System's June 2009 update. The darkest shades in the bottom of the chart represent fifth-generation aircraft (F-22s and F-35s). The multiple lighter shades represent various models of legacy aircraft (F-16s, F-15s, A-10s). (From National Guard Bureau / Strategic Planning.)

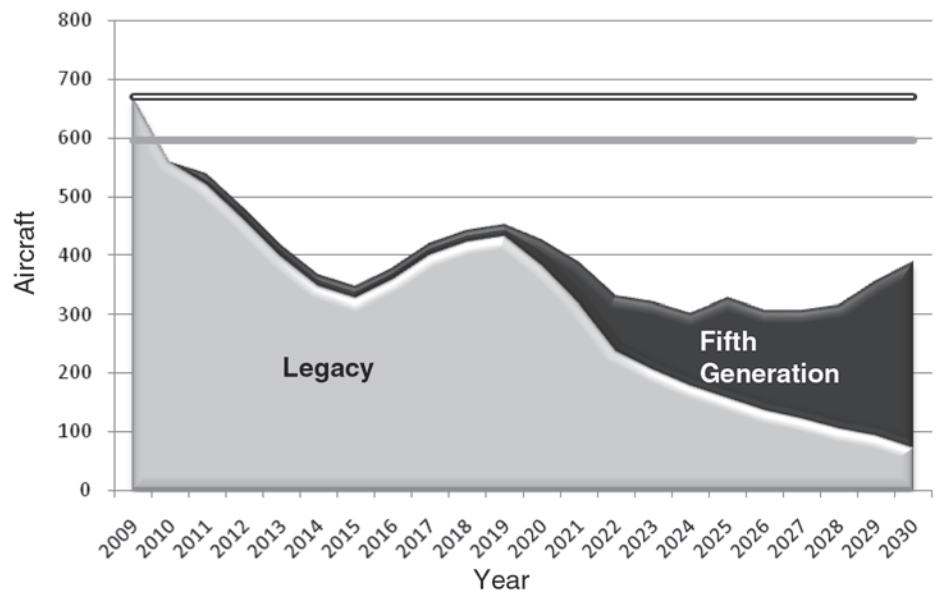

Figure 2. Structure of the Air National Guard's fighter force. (From National Guard Bureau / Strategic Planning.)

to age faster than replacements can support even a reduced requirement.

The solution first requires the Air Force to acknowledge the ANG's shift from a strategic reserve to an operational force. Later, the solution requires concurrent and proportional fielding of new systems between the AC and reserve component (RC). Although the ratio will vary across different mission-design series and/or functional areas, fielding new systems in the AC and RC concurrently will mitigate the ANG's inventory problems and preserve the most cost-effective portion of the Total Force's fighter structure.

The Evolving Air National Guard: Missions

The ANG has always performed as both a strategic reserve and an operational force, delivering critical capability to the US defense strategy by filling the gap when mission requirements exceed the Air Force's force structure. Starting in 1953 and continuing after the end of the Cold War, the ANG performed air defense missions (the historic precursor to ASA) to protect the United States from an air threat. This tasking eventually involved every ANG fighter squadron.[14] Driving this mission was the inability of the AC to man the mission sufficiently while concurrently meeting overseas commitments.[15] Thus, the Cold War period demonstrates the use of the ANG as a strategic reserve that provided a capability shock absorber even as it conducted operational missions instrumental to homeland defense.[16]

Critical ANG integration did not end with the thawing of the Cold War. After Saddam Hussein invaded Kuwait in 1990, the United States mobilized for war, sending hundreds of Air Force assets and thousands of personnel to the Persian Gulf, including 12,456 ANG guardsmen.[17] During the 12 years following the Gulf War, almost every fighter unit in the ANG deployed to the Middle East to enforce the no-fly zones in northern and southern Iraq—many on multiple occasions. Additionally, ANG fighters participated in enforcing the Balkans no-fly zone and in Operation Allied Force. Moreover, when Operation Enduring Freedom kicked off in 2001 and Operation Iraqi Freedom in 2003, ANG units participated from day one, deploying 236 of the Air Force's 863 aircraft (27 percent), 92 of them fighters (31 percent of the total fighters). Over 7,200 air guardsmen deployed for the opening phase of Iraqi Freedom, representing 11 percent of the 64,246-strong Air Force contingent.[18]

In some cases, the ANG took the lead in force presentation. Several guardsmen from operational units, the ANG, and the Air Force Reserve Test Center were instrumental in developing new tactics, techniques, and procedures for integrating emerging fighter capabilities with US and coalition special operations forces. These efforts led to the creation of the 410th Air Expeditionary Wing, an entirely ANG-led wing that integrated ANG, Air Force, and Royal Air Force (British) units. The 410th conducted counter-theater-ballistic-missile missions (a strategic priority of the combined force commander) and provided direct support to teams of special operations forces in western Iraq.[19]

The wars in the Middle East have witnessed the continual presence of the ANG, which has provided fighters; airlift; air refueling; search and rescue; special operations; and intelligence, surveillance, and reconnaissance in five different manned and unmanned platforms alongside active duty counterparts constantly since 2001. The ANG currently provides 25 percent of both remotely piloted vehicle sorties and processing, exploitation, and dissemination services to the joint force.[20] In addition, ANG air operations groups, medical groups, security forces squadrons, and civil engineering squadrons have all deployed in support of overseas contingency operations. Finally, after the attacks of 11 September 2001, the nation tasked the ANG to restart the ASA mission; currently, it operates 16 of the 18 ASA sites. Clearly, as the chief of staff of the Air Force stated, "The Air National Guard is indispensible. . . . [It] is integral to the total

force. . . . The scale has tipped to the Air National Guard as an operational reserve."[21]

The increased operational use of reserve forces culminated in Department of Defense Directive (DODD) 1200.17, *Managing the Reserve Components as an Operational Force*, signed by the secretary of defense on 28 October 2008. This document recognizes the RCs as part of the Total Force, emphasizing that "it is DoD policy that . . . the RCs provide operational capabilities and strategic depth to meet U.S. defense requirements across the full spectrum of conflict" while providing a "connection to and commitment of the American public."[22]

The Evolving Air National Guard: Materiel

Acknowledging use of the RC as an operational force, however, has not translated into a concomitant procurement strategy. Since its inception, the Air Force has continually acquired new aircraft and equipment, passing the old (and generally inferior) models to the RC. For example, as the AC upgraded its second-generation F-102s and F-106s to third-generation F-4s, it passed the older aircraft—those with limited ability to support existing war plans—to the ANG for single-mission tasking in air defense. Once the fourth-generation fighters came on line (F-15s and F-16s), those F-4s went to the ANG. Recapitalization of the fighter fleet in this manner is indicative of the now-outdated notion of the ANG as a mere strategic reserve.

Nevertheless, the trickle-down pattern continues as the Air Force recapitalizes or inactivates squadrons. For example, AC F-16s progressed from Block 10 to 15, 25, 30, 40, and 50, yet only one ANG unit currently flies the Block 50.[23] F-15Cs/Ds replaced F-15As/Bs, and the F-15E production line ended with all of the jets in AC squadrons.[24] In seven AC squadrons, F-22s replaced F-15Cs, many of which flowed to the ANG. Even though the AC has no Block 25s or Block 30s in its inventory the ANG still has Block 25 and 30 F-16 squadrons.

The F-22, however, presents an illustrative case. Air Force procurement of 381 F-22s to fulfill the requirement (reduced from the 750 called for originally) would have greatly alleviated the acute issue of ANG recapitalization. Concepts proposed for equipping the ANG with the F-22 included a plan that would have better supported air defense operations by replacing older aircraft in the four corners of the United States.[25] As it stands, only two ANG units will fly the F-22. The Virginia ANG now flies it in a classic association with an AC unit at Langley AFB, Virginia. In this type of association, the Air Force maintains possession of the aircraft, and ANG personnel fly and maintain it alongside the AC owners. The Hawaii ANG will receive hand-me-down F-22s during fiscal year 2012 with traditional unit ownership of the airframes.

The F-35 program further illustrates the need for concurrent and proportional recapitalization. The plan to recapitalize current ANG fighters follows the pattern outlined above, and the operational risk shouldered by the ANG renders the plan dangerously slow. According to the Government Accountability Office, 11 of 18 ASA units will age out prior to receiving new aircraft.[26] The current F-35 fielding program may be *proportional* in the long run (fig. 3) since the percentage of fighter force structure in the AC and RC is roughly equal at the beginning and end of the program, but it is decidedly not *concurrent* since in the near term the RC loses a disproportionate percentage of aircraft. The chief risk for the ANG, therefore, lies in the possibility of the Air Force's curtailing the F-35 program short of reaching the goal of 1,763 aircraft.

These fears are not unfounded. If history is a guide, then actual F-35 procurement will likely involve far fewer aircraft than the 1,763 currently planned.[27] With the exception of the F-117, the United States has drastically reduced its planned

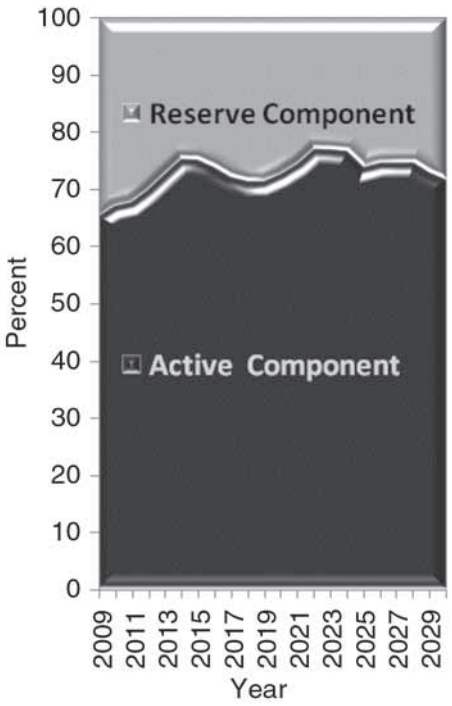

Figure 3. Percentage of fighter force in the active and reserve components. (From National Guard Bureau / Strategic Planning.)

acquisition of low-observable aircraft. The F-117 program saw 59 operational aircraft purchased following a planned procurement of 20.[28] The B-2 and the F-22 programs, however, saw 20 for 132 and 187 for 750, respectively.[29] If a reduced buy occurs, with a consequent delay in the ANG's recapitalization, the ANG cannot sustain current missions, including ASA. The Air Force's need for the RC as an operational force presents the nation with a dire situation—one analogous to an era when the ANG flew outmoded aircraft neither credible enough to deter the nation's enemies nor able to defeat them if deterrence failed. As Secretary Gates said, "The role of the National Guard in America's defense has transformed from being a strategic reserve to being part of the pool of forces available for deployments."[30]

Impact

The impending ANG fighter gap is a symptom of a larger problem—suboptimal fielding decisions on behalf of the DOD and Air Force. As demonstrated earlier, these plans, based on the outdated perception of the RC as solely a strategic reserve, typically replaced RC equipment with hand-me-down equipment from the AC as the latter received newer systems. As illustrated above, the Total Force has abandoned the notion of the RC as a simple strategic reserve or single-mission air defense force; rather, the AC increasingly uses the RC as an operational force and shock absorber for surging demands. In most contemporary cases, the RC is an instrumental part of the frontline fighting force. Yet, even though use of the RC has steadily increased, funding and equipping of the force follows the historical paradigm.

According to Secretary of the Air Force Michael B. Donley and Chief of Staff of the Air Force Gen Norton A. Schwartz, "Our FY10 budget proposal *accelerates the integration of our Guard and Reserve components into new and emerging mission sets, including unmanned aerial systems, F-22 and F-35 missions*. By considering Air National Guard and Air Force Reserve Command for inclusion in emerging mission areas and basing strategies, *we capitalize on the experience and unique skill sets that our Air Reserve Components contribute to the Total Force*" (emphasis added).[31] Despite such Total Force language highlighting the critical and indispensible contribution of the RC, the AC has yet to match words with action—especially in the realm of recapitalization. Ostensibly done to maintain equities in the AC—perceived by senior leaders as the most accessible and responsive part of the force—recapitalization plans based on anachronistic notions of a strategic reserve hurt the Total Force in several ways.[32] For the RC, these plans predictably reduce the component's access to the newest equipment, ultimately reducing its ability to carry out its missions at home and

abroad. The post-9/11 buildup to Iraqi Freedom offers a telling example of this condition.

At that time, the ANG operated most of the Block 30 F-16s. These aircraft lacked critical capabilities for delivering precision-guided munitions increasingly desired by commanders for Operations Northern and Southern Watch. Unable to receive targeting pods from the AC due to budget priorities, the ANG ultimately defined its own requirement for a precision air-targeting system, which led to procurement of the Litening II advanced targeting pod, funded by the National Guard.[33] Additionally, the ANG solved a dearth of data-link capability by fielding the Situational Awareness Data Link. These systems enabled the ANG Block 30 fleet to provide necessary capabilities to combatant commanders, leading to significant ANG participation in ASA, Enduring Freedom, and Iraqi Freedom. Without these National Guard purchases, the ANG's capabilities deficit would have rendered it less effective as an operational force.

For the AC, reduced RC capabilities require that it shoulder a greater burden in terms of missions and tasks. Additionally, recapitalization plans based on historic notions threaten the AC's control over its own acquisition and force-structure programs by invoking the ire of interested parties such as Congress. Evidence of this occurs in the following example of legislative language:

> None of the funds provided in title III of this Act may be obligated for F-16 aircraft modifications until the Secretary of the Air Force submits a report to the congressional defense committees detailing a plan to assign, no later than the first quarter of fiscal year 2002, F-16 Block 40 aircraft, or later model F-16 aircraft, to Air National Guard units which were deployed to Operation Desert Storm.[34]

Only two ANG F-16 units deployed to Operation Desert Storm, one of them the 174th Fighter Wing, New York ANG. Following their return from the Middle East, both units received later-model F-16s. During 1999, ostensibly to open a training base at another Guard base, the 174th swapped its Block 30 F-16s with older Block 25 models from another unit. The New York congressional delegation responded quickly with the statement quoted above. Essentially the New York representatives held every active, Guard, and Reserve F-16 hostage until they received a commitment to upgrade the 174th Fighter Wing. The language that ultimately became part of the act was less severe, but the delegation got its message across: in 2002 the 174th received later-model F-16s, as well as the Sniper Advanced Targeting Pod, and retired the Block 25s.[35]

Members of Congress are willing to engage when they see constituents negatively affected by bureaucracy. As ANG aircraft age and become less relevant against increasingly sophisticated global threats, Congress will likely act, and the results will satisfy only the locals. Procurement of the F-15E Strike Eagle offers another example. Boeing/McDonnell-Douglas delivered 209 F-15Es between 1987 and 1994.[36] Sales then shifted to foreign buyers. During the 1996 to 2001 funding cycles, threatened with a termination of the F-15 production line (and loss of 5,000 jobs), Congress forced an additional 36 F-15Es on a reluctant Air Force. During 1999, Congress funded five additional F-15Es even though the Air Force had not requested any.[37] Of the $220 million appropriated for these aircraft, $70 million came from a reduction in the maintenance budget.[38]

Current, similar examples threaten the Air Force's ability to reap cost savings from the early retirement of legacy systems. Such savings could provide funds to boost F-35 production significantly or develop emerging missions.[39] If the Air Force is convinced that the future of the fighter force lies with the F-35, can it afford to accept new F-16s or even a 4.5-generation fighter like the F/A-18E Super Hornet?

Additionally, the ANG is home to some of the most experienced pilots in the Air Force. The current recapitalization plan allows ANG aircraft to age out prior to replacement, effectively reducing aircraft inventory below the level needed to sus-

tain pilot proficiency. The ANG is a storehouse of flying experience that allows the Air Force to retain expertise while developing new pilots. Without aircraft, severe consequences such as a loss of experience caused by reduced pilot absorption ripples across the Total Force, and initiatives designed to capture the efficiencies of the ANG come to an abrupt halt. Even a proportional recapitalization arrives too late to save the real value of the unit—its people and their experience. DODD 1200.17 mandates cross-component assignments integrating the AC and RC. The current recapitalization plan negates this integration for the entire fighter community unless the Air Force concurrently equips both components with similar capabilities.[40]

The final AC issue becomes one of cost-effectiveness and efficiency. Specifically, both the Government Accountability Office and the Commission on the National Guard and Reserves have found that the average ANG unit operates at approximately 25 percent of the cost of its AC counterpart.[41] Comparing the capabilities that the ANG provides to the Total Force (30 percent) to its portion of the overall Air Force budget (6 percent) presents further evidence of the efficiencies of the ANG.[42] Admittedly, these figures do not reduce the cost of procuring F-35s, but planning their beddown in the Air Force's most cost-efficient franchise seems a prudent move, based on current fiscal realities.

Conclusion: Concurrent and Proportional Recapitalization Will Minimize and/or Eliminate the Negative Effects of the Current Plan

The Air Force can attain the twin goals of concurrency and proportionality without additional monetary investment. It needs only the imagination and will to create a new road map that addresses the concerns discussed above. Critical to this map is commitment on the part of the Air Force to agree to a desired AC/RC fighter force mix and apportion the corresponding percentage to each component each year. This is not necessary early in the program since the majority of aircraft must be coded for testing and training. For example, assuming that the current ANG-to-AC proportion remains constant (approximately one to three), a production of 80 operational aircraft should see 24 of them programmed to recapitalize ANG units, with the remaining 56 flowing to the Air Force. Additionally, to meet the understandable desires of overseas units, the service could generate more operational units faster by initially recapitalizing squadrons in units of 18 versus 24 aircraft.[43] Once each scheduled squadron has reached the 18-aircraft threshold, the Air Force could revisit locations where it desires 24 aircraft.

The Total Force benefits when the ANG can better execute its responsibilities as an operational force and support the Air Force's surge requirements. To ensure that the ANG retains this ability, it must maintain interoperable equipment, which requires concurrent and proportional fielding of new weapons systems. This article demonstrates that immediately commencing concurrent and proportional recapitalization of the RC will allow the Air Force to continue to use the RC as it has done during the past 19 years.

Concurrent and proportional recapitalization also benefits the service in terms of creating a trickle-down effect for the future and the possibility of preventing another ANG capability gap 40 years from now. Contemporary recapitalization choices affect future recapitalization. Concurrent and proportional recapitalization today prevents future leaders from facing the same problem tomorrow.

The authors recognize the inevitable criticism that this article will engender, likely leading to claims that an outmoded ANG fighter mafia is seeking to maintain a foothold in a dying mission area. This is not the case, however, since the authors

merely seek the most efficient manner of fulfilling national security objectives. Concurrent recapitalization is neither a new nor an unusual concept with respect to the AC and RC. In fact, it has occasionally been the norm in the airlift community. As early as 1979, the ANG recapitalized C-130A aircraft with brand-new, off-the-assembly-line C-130Hs.[44]

The director of the ANG recently stated that the Air Force—therefore the ANG—will operate fewer fighters in the future.[45] This is a given; however, the ANG should maintain its fighter-force equities in proportions similar to the presidential budget prior to fiscal year 2010 (approximately one-third). Additionally, the concurrency and proportionality arguments made in this article apply to procurement efforts outside the current fighter debate. Specifically, the concepts described should extend to recapitalization plans that will soon emerge for the C-130 and KC-X, as well as current discussions on the Air Force's transition of all MQ-1s to the ANG to create room for AC procurement of newer MQ-9s.

Areas for Future Study

The Air Force should conduct a new operational analysis to better identify specific numbers of fighters required to meet the nation's security objectives. By definition, this study should be informed by the final QDR recommendations and emerging national military strategy. Next, the Total Force—that is, all of the services—must arrive at a common definition of service life, especially with the fielding of the triservice F-35. Moreover, in this area, the addition of reliable costing data for Service Life Extension Programs (SLEP) and modernization programs would offer leaders better information with which to make investment decisions. Before embarking on a SLEP, given the emerging threats, Air Force leaders must determine how long the existing legacy fighter fleet will remain relevant. Such a determination informs both the SLEP and modernization programs. Finally, this article highlights the need to determine the appropriate force-structure mix between AC and RC forces. Previous studies have done an admirable job of discussing the variables that affect such a mix, but more research is necessary regarding the particulars of how this mix should vary among mission sets and how steady-state, deploy-to-dwell ratios should affect the percentages. ✪

Washington, DC

Notes

1. House, *Department of the Air Force, Presentation to the House Armed Services Committee, United States House of Representatives, Fiscal Year 2010 Air Force Posture Statement, the Honorable Michael B. Donley, Secretary of the Air Force, and General Norton A. Schwartz, Chief of Staff, United States Air Force*, 111th Cong., 1st sess., 19 May 2009, http://www.posturestatement.af.mil/. Hereafter *Fiscal Year 2010 Air Force Posture Statement*.

2. Audrey Kurth Cronin and James M. Ludes, eds., *Attacking Terrorism: Elements of a Grand Strategy* (Washington, DC: Georgetown University Press, 2004), 292.

3. Several sources point to the cost-effectiveness of the ANG, compared to similar Air Force units. See US Government Accountability Office, *Military Personnel: DOD Needs to Establish a Strategy and Improve Transparency over Reserve and National Guard Compensation to Manage Significant Growth in Cost* (Washington, DC: Government Accountability Office, 2007), 21, 41; and US Commission on the National Guard and Reserves, *Transforming the National Guard and Reserves: Final Report to Congress and the Secretary of Defense* (Arlington, VA: Commission on the National Guard and Reserves, 31 January 2008), 65–68.

4. "The Air Force in Facts and Figures," *Air Force Magazine* 92, no. 5 (May 2009): 48, http://www.airforce-magazine.com/MagazineArchive/Pages/2009/May%202009/0509cover.aspx (accessed 10 December 2009).

5. The claims made in this article have their basis in the latest F-35 fielding plans of Air Combat Command. Recent initiatives by the Strategic Basing

Executive Steering Group, led by Assistant Secretary of the Air Force, Installations, have indicated that several ANG bases are candidates for F-35 fielding. A listing as possible candidate bases, however, does not constitute a definitive commitment on behalf of the Air Force to address ANG recapitalization needs.

6. Given the limited size of the forces available, even with fifth-generation capability, the United States would have trouble deterring or defeating a determined and growing Chinese fourth-generation fighter threat supporting a Taiwan Strait expedition. See Frank Camm et al., *Managing Risk in USAF Force Planning* (Santa Monica, CA: RAND, 2009), http://www.rand.org/pubs/monographs/2009/RAND_MG827.pdf (accessed 10 December 2009).

7. John A. Tirpak, "Fighter of the Future," *Air Force Magazine* 92, no. 7 (July 2009): 22–27, http://www.airforce-magazine.com/MagazineArchive/Pages/2009/July%202009/0709cover.aspx (accessed 10 December 2009).

8. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 (as amended through 19 August 2009), http://www.dtic.mil/doctrine/jel/doddict/data/m/10567.html (accessed 9 September 2009).

9. Secretary of Defense Robert Gates asks, "Where on earth would we do that?" Robert M. Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs* 88, no. 1 (January/February 2009): 34.

10. The reduction of F-22s from 381 to 183 (now 187) reflected an acceptance of moderate risk in favor of low risk. See Norton A. Schwartz (remarks, Defense Writers Group, Washington, DC, 17 February 2009), http://www.airforce-magazine.com/DWG/Pages/default.aspx (accessed 10 December 2009). Presumably, the same argument holds true about any reduction of the overall Air Force fighter fleet requirement below 2,250 aircraft (assuming that the F-35 buy proceeds at the planned 1,763 aircraft). "The Air Force position remains that a 2250 combat aircraft inventory is the required force." See Senate, *Lt Gen Donald J. Hoffman, SAF/AQ, and Lt Gen Daniel J. Darnell, AF/3/5, Presentation to the Senate Armed Services Committee, Airland Subcommittee: Aviation Programs*, 110th Cong., 2d sess., 9 April 2008, http://armed-services.senate.gov/statemnt/2008/April/Hoffman-Darnell%2004-09-08.pdf (accessed 6 October 2009). The House debated a reporting requirement based upon a projected shortfall of the "2,200" requirement. See *National Defense Authorization Act of 2010*, HR 2647, 111th Cong., 1st sess., *Congressional Record* 155 (25 June 2009): H7265.

11. Chief of Staff of the Air Force Gen Norton A. Schwartz testified that the Air Force's plan to field 2,250 fighters is under review. "Air Force Need for F-35s Is under Review," *Government Executive*, 3 June 2009, http://www.govexec.com/dailyfed/0609/060309cdpm1.htm (accessed 11 December 2009).

12. Each vendor and/or system program office has a different AFH-to-EFH correction factor for each specific model of aircraft.

13. For the purposes of this article, the term *AC* refers to the regular Air Force. The term *reserve component* (RC) indicates both the ANG and Air Force Reserve. The term *Total Force* includes both the AC and RC.

14. There were 70 ANG fighter squadrons at the time.

15. Susan Rosenfeld and Charles J. Gross, *The Air National Guard at 60: A History* ([Arlington, VA]: Air National Guard, 2008), 9.

16. Throughout the Cold War, the Air Force had the capacity to maintain a dedicated home-station alert force in addition to its "wartime" force structure since it had 36 fighter wing equivalents. This option no longer exists because capacity diminished rapidly to 20 fighter wing equivalents after the Cold War. See Adam J. Hebert, "Eighty-Six Combat Wings," *Air Force Magazine* 89, no. 12 (December 2006): 25–29, http://www.airforce-magazine.com/MagazineArchive/Pages/2006/December%202006/1206wings.aspx (accessed 22 September 2009).

17. Rosenfeld and Gross, *Air National Guard at 60*, 16.

18. Gen T. Michael Moseley, *Operation Iraqi Freedom—By the Numbers* (Shaw AFB, SC: US Central Command Air Forces, 30 April 2003), 3, http://www.globalsecurity.org/military/library/report/2003/uscentaf_oif_report_30apr2003.pdf (accessed 17 September 2009).

19. Ibid., 4.

20. Personal communication with National Guard Bureau, Directorate of Intelligence, Surveillance, and Reconnaissance, 29 October 2009.

21. Gen Norton A. Schwartz (remarks, 131st Annual Meeting of the National Guard Association of the United States General Conference, Nashville, TN, 12 September 2009).

22. Department of Defense Directive (DODD) 1200.17, *Managing the Reserve Components as an Operational Force*, 29 October 2008, 1, 2, http://www.dtic.mil/whs/directives/corres/pdf/120017p.pdf (accessed 10 December 2009).

23. "Lockheed Martin F-16CJ/DJ Block 50D/Block 52D Fighting Falcon," Jane's Information Group, http://www.janes.com/articles/Janes-Electronic-Mission-Aircraft/Lockheed-Martin-F-16CJ-DJ-Block-50D-Block-52D-Fighting-Falcon-United-States.html/ (accessed 11 December 2009).

24. "United States—Air Force [Order of Battle]" Jane's Information Group, http://www8.janes.com/Search/documentView.do?docId=/content1/janesdata/binder/jwaf/jwafa297.htm@current&pageSelected=allJanes&backPath=http://search.janes.com/Search&Prod_Name=JWAF&keyword=#toclink-j0011040007747 (accessed 29 October 2009).

25. Senate, *Statement of Hon. Michael W. Wynne, Secretary of the Air Force, U.S. Senate, Subcommittee of the Committee on Appropriations*, 110th Cong., 2d sess., 12 March 2008, http://www.gpo.gov/fdsys/pkg/CHRG-110shrg11069104293/html/CHRG-110shrg11069104293.htm (accessed 29 October 2009).

26. Davi M. D'Agostino, *Homeland Defense: Actions Needed to Improve Management of Air Sovereignty Alert Operations to Protect U.S. Airspace* (Washington, DC: US Government Accountability Office, 2009), 27, http://purl.access.gpo.gov/GPO/LPS114056 (accessed 11 December 2009).

27. Already, emerging strategy proposals are advocating reduced F-35 procurement. Thomas P. Ehrhard, *An Air Force Strategy for the Long Haul* (Washington, DC: Center for Strategic and Budgetary Assessments, 2009).

28. Barry Watts, *The F-22 Program in Retrospect*, CSBA Backgrounder: Strategy for the Long Haul (Washington, DC: Center for Strategic and Budgetary Assessments, August 2009), 11, http://www.csbaonline.org/4Publications/PubLibrary/B.20090908.F-22_Program_in_Re/B.20090908.F-22_Program_in_Re.pdf (accessed 11 December 2009).

29. Ibid.

30. Senate, *Statement on DOD Challenges Submitted to the Senate Armed Services Committee by Secretary of Defense Robert M. Gates*, 111th Cong., 1st sess., 27 January 2009, http://www.defenselink.mil/speeches/speech.aspx?speechid=1337 (accessed 22 September 2009).

31. *Fiscal Year 2010 Air Force Posture Statement*.

32. Albert A. Robbert, William A. Williams, and Cynthia R. Cook, *Principles for Determining the Air Force Active/Reserve Mix* (Santa Monica, CA: RAND, 1999), 11, http://www.rand.org/pubs/monograph_reports/2007/MR1091.pdf (accessed 11 December 2009).

33. The National Guard made this purchase using the National Guard and Reserves Equipment Account and specific congressional additions to the National Defense Appropriations Act. The National Guard determined that the planned AC-to-RC cascade of low-altitude navigation and targeting infrared for night (LANTIRN) pods did not add sufficient capability to the ANG's F-16 fleet. DOD policy now restricts such purchases to the parent service. National Guard Association of the United States, "NGAUS 101: Resourcing the National Guard or 'The Color of Money'" (Washington, DC: NGAUS, 2009), 4, http://www.ngaus.org/ngaus/files/ccLibraryFiles/Filename/000000004992/NGAUS%20101%20Resourcing%20the%20National%20Guard.pdf (accessed 16 September 2009).

34. *Department of Defense Appropriations Act, 2001*, HR 4576, 106th Cong., 2d sess., *Congressional Record*, 7 June 2000, sec. 8110, H4010, http://www.globalsecurity.org/military/library/congress/2000_rpt/hr4576-h.htm (accessed 10 December 2009).

35. The following is the final language in the act: "SEC. 132. REPORT ON MODERNIZATION OF AIR NATIONAL GUARD F-16A UNITS. The Secretary of the Air Force shall, not later than February 1, 2001, submit to Congress a plan to modernize and upgrade the combat capabilities of those Air National Guard units that, as of the date of the enactment of this Act, are assigned F-16A aircraft so that those units can be deployed as part of Air Expeditionary Forces." *Floyd D. Spence National Defense Authorization Act of 2001*, Public Law 106-398, 106th Cong., 2d sess., 30 October 2000.

36. "Boeing F-15E Eagle," Jane's Information Group, http://www.janes.com/articles/Janes-All-the-Worlds-Aircraft/Boeing-F-15E-Eagle-United-States.html (accessed 11 December 2009).

37. United Press International, "F-22 Endures Cut, F-15 Gets Funds," 7 October 1999.

38. Sgt Jon Soucy, USA, "Wyatt Says Air Guard Faces Capitalization Issues," *National Guard News*, 29 July 2009, http://www.ng.mil/news/archives/2009/07/072909-Wyatt.aspx?src-rss (accessed 3 September 2009).

39. The following language was debated in the House version of the National Defense Authorization Act for fiscal year 2010: "Not later than 90 days after the enactment of this Act, the Secretary of Defense shall submit to the congressional defense committees a report on 4.5 generation fighter aircraft procurement. The report shall include the following . . . (6) A discussion regarding the availability and feasibility of F-35s in fiscal years 2015 through fiscal year 2025 to *proportionally* and *concurrently* recapitalize the Air National Guard" (emphasis added). In addition to the report on 4.5-generation aircraft, the House debated language both prohibiting the retirement of "any fighter aircraft pursuant to the Combat Air Forces restructuring plan" and requiring that "at least $344,600,000 shall be expended for continued operation and maintenance of the 249 fighter aircraft scheduled for retirement in fiscal year 2010 pursuant to such restructuring plan." *National Defense Authorization Act of 2010*, H7265, 7300.

40. DODD 1200.17, *Managing the Reserve Components as an Operational Force*, enclosure at 10.i.

41. US Government Accountability Office, *Military Personnel*, 21, 41; and Commission on the National Guard and Reserves, *Transforming the National Guard and Reserves*, 65–68.

42. The 30 percent capability is the ANG's total aircraft inventory (1,213) divided by AC's total aircraft inventory (3,990). The 6 percent figure comes from an analysis of the ANG budget and the total Air Force budget. For a complete breakdown of the analysis, see Commission on the National Guard and Reserves, *Transforming the National Guard and Reserves*, 65n2.

43. Acknowledging the capability increase of fifth-generation aircraft over their fourth-generation cousins gives an additional boost to the concept of a standard AC squadron size of 18 aircraft. See Hebert, "Eighty-Six Combat Wings."

44. Rosenfeld and Gross, *Air National Guard at 60*, 14.

45. Lt Gen Harry M. Wyatt, director of the Air National Guard (remarks, 131st Annual Meeting of the National Guard Association of the United States General Conference, Nashville, TN, 13 September 2009).