



# AMERICA'S ARMY: THE STRENGTH OF THE NATION

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Army G-3/5/7



## National Commission on the Future of the Army: Aviation Restructure Initiative (ARI)

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## The Army's Aviation Restructure Initiative (ARI)

- A. **Army Background Paper #38 – ARI:** This paper provides an overview of ARI. It charts the development of ARI starting with planning & collaboration, next describes the plan, reviews the approval process with associated compromises with the Army National Guard, before describing the findings of all independent organizations who reviewed and audited the plan. It finishes with the official Army position on ARI.
- B. **Secretary of Defense FY15 Budget Preview, (24 February 2014):** Secretary Hagel's comments concerning the FY15 budget submission, including remarks on the Army's Aviation Restructure Plan.
- C. **OSD-CAPE Tiger Team Council of Governors' Briefing (2 December 2014):** Information briefing to the Council of Governors showing that the approved ARI plan cost less, provided more capacity, met warfighting demands, and presented reduced operational and training risk when compared to the NGB proposal.
- D. **Aviation Force Structure Sufficiency Risk Analysis, TRADOC Analysis Center (January 2015):** This paper provides comparative analysis on the sufficiency of potential Aviation Force Structure design options to meet operational demands over time. Specifically, the analysis considers the sensitivities of the results to less favorable assumptions and the operational risks associated with adoption of the ARNG design option versus the ARI design option.
- E. **Government Accountability Office (GAO) Force Structure: Army's Analyses of Aviation Alternatives, Executive Summary (27 April 2015):** NDAA 15 directed report on the analyses of the Army's ARI and the NGB Alternate.
- F. **DoD Comment Letter, Government Accountability Office Report (GAO-15-430R):** The Army's response to the GAO report and findings.
- G. **OSD-CAPE Independent Cost Estimate of the ARI and the National Guard Alternative (11 May 2015):** Report in response to Senate Report 113-211 accompanying H.R. 4870, Department of Defense Appropriations Bill, 2015, requesting that CAPE conduct an independent cost analysis of both the Army Aviation Restructure Initiative (ARI) and the Army National Guard Bureau (NGB) alternative.
- H. **Transparency with the National Guard:** HQDA G3/5/7 documentation of the interactions with the NGB and ARNG during the development and refinement of the ARI plan
- I. **Horse Blanket:** One page, FY by FY overview of ARI by unit and component (FY14-19) *(Loose)*



TAB A - Army Background Paper #38  
Aviation Restructure Initiative (ARI)



**Army Background Paper # 38  
Aviation Restructure Initiative (ARI)**

**PURPOSE:** This paper provides background on the Army’s Aviation Restructure Initiative (ARI), supporting analyses and its implementation to date.

**BACKGROUND INFORMATION:**

Planning & Collaboration: During the summer of 2013, in response to the fiscal constraints imposed by the Budget Control Act of 2011 and sequestration, the Army planned to cut its aviation force to achieve end strength and budget-driven structure limitations. This approach became known as “the salami slice” because it indiscriminately inactivated five aviation brigades (3 active, 2 reserve) and everything in them with no mitigation for reduced warfighting capacity.

Proposed “Salami Slice” Aircraft Reductions by Component (2013)

<u>Helicopter</u>	<u>Regular</u>	<u>Guard</u>	<u>Reserve</u>	<u>Total</u>
Apache	-72	-72	0	<b>-144</b>
Kiowa Warrior	-30	0	-	<b>-30</b>
Blackhawk	-106	-106	0	<b>-212</b>
Chinook	-24	-24	0	<b>-48</b>
Lakota	0	-32	-	<b>-32</b>
<b>Total</b>	<b>-232</b>	<b>-234</b>	<b>0</b>	<b>-466</b>

Aviation planners, however, identified three major problems with this approach. First, the Army would divest many of its most modern and capable aircraft (436 Apaches, Blackhawks, Chinooks, and Lakotas), while maintaining a fleet of older, less capable Kiowa Warriors. Next, the Army would be unable to fund important modernization programs to include UH-60 Blackhawk upgrades, training helicopter procurement, and Kiowa service life extensions. Finally, cuts would be perceived as disproportionate to the Guard (based on observations of the Air Force Commission), thus creating difficult political headwinds.

To mitigate the deficiencies associated with the salami slice and still find the savings required by law, Headquarters Department of the Army (HQDA) aviation staff/planners (from the Offices of the Deputy Chiefs of Staff, G3 and G8) developed an alternate proposal that became the foundational concept for ARI. In Jul 13, the HQDA aviation planners refined the concept within the Army Staff so that by mid-August, they could review its details with the larger aviation community. The Army Aviation Center at Fort Rucker, AL, established a collaborative ARI planning effort in Sep 13 and, importantly, the Guard recommended refinements that resulted

TAB A –

in the preservation of important capabilities (i.e., four General Support Aviation (Blackhawk, Chinook, MEDEVAC) Battalions).

The ARI Plan: The Chief of Staff of the Army (CSA) was directly involved in shaping ARI soon after HQDA planners proposed the concept. The CSA (a former Director of Army Force Management) provided four important organizing principles:

- Continue to provide the Soldier on the ground with superior aviation support in spite of fiscal limits.
- Retain the Army's modernized, most capable systems.
- Plan for regeneration or the ability to rapidly rebuild aviation for emerging wartime requirements.
- Adjust Active Component/Reserve Component (AC/RC) force structure to maximize utility for States, homeland security, disaster relief, and wartime contingencies.

The initial ARI met the above guidance, provided increased capacity, reduced operational risk, and remained within fiscal constraints. The initial ARI restructured the aviation force as follows:

- Retired all Kiowa Warriors and canceled the \$10B cockpit and sensor upgrade program (CASUP); reinvested funds for ARI-related training and aviation programs.
- Utilized Apaches and unmanned aircraft systems (UAS) in the armed aerial scout role to replace Kiowa Warriors.
- Consolidated all Apaches in the Regular Army.
- Transferred more than 111 UH-60 Blackhawks to the Guard to meet support, lift and medical evacuation requirements at home and abroad.
- Retired all single-engine training aircraft (Kiowa and Creek) and used already fielded and available dual-engine LUH-72 Lakotas for the Fort Rucker training mission.
- Inactivated three AC aviation brigades; maintained 12 of 12 RC aviation brigades.

Plan Approval & Compromise: The Secretary of the Army and CSA approved ARI at the end of Oct 13. Soon thereafter, the Army adopted ARI as part of the program review process to which OSD planners and leaders agreed. On 2 Nov 13, Deputy Secretary of Defense Ashton Carter led the Deputy's Management Action Group (DMAG), which included consideration of ARI for implementation into the President's FY15 Budget. The Deputy Secretary of Defense endorsed the OSD Capabilities Assessment and Program Evaluation (CAPE) recommendation to proceed with ARI by putting it into the FY15 President's Budget. Subsequently, Guard leaders objected to the removal of half of the 212 LUH-72 Lakotas assigned to Guard units. As a compromise, the Secretary of Defense directed the Army to procure an additional 100 LUH-72s at a cost of more than \$800M. Some additional funding was provided to the Army for FY 15 procurement as a result of the 2013 Bipartisan Budget Act.

ARI Aircraft Increases/Decreases by Component

<b>Helicopter</b>	<b>Regular</b>	<b>Guard</b>	<b>Reserve</b>	<b>Total</b>
Apache	+120	-192	0	<b>-72</b>
Kiowa Warrior	-338	-30	-	<b>-368</b>
Blackhawk	-159	+111	0	<b>-48</b>
Chinook	0	0	0	<b>0</b>
Lakota	+100	0	-	<b>+100*</b>
Kiowa	-228	-	-	<b>-228</b>
Creek	-182	-	-	<b>-182</b>
<b>Total</b>	<b>-687</b>	<b>-111</b>	<b>0</b>	<b>-798</b>

\* The OSD directed purchase of 100 additional LUH-72 aircraft will fully equip Fort Rucker, AL for initial aviation training for Active, Army National Guard and Army Reserve aviators.

**ARI Analyses:** HQDA planners and Army senior leaders subjected ARI to vigorous analyses from inside and outside the Army to verify cost methodologies, assess sufficiency analysis, and ensure competing alternatives were fairly considered.

*Sufficiency Analysis.* The US Army Training and Doctrine Command’s Analysis Center (TRAC) utilized a simulation model to determine ARI’s demand satisfaction in support of DOD’s approved war fighting plans. TRAC’s model compares the “supply” of available units versus the “demands” of the scenario. The analysis concluded with a high degree of confidence that the ARI force outperformed alternative options in its ability to provide combatant commanders with the necessary aviation force. Alternate options would reduce the likelihood that commanders would have all required full spectrum aviation capabilities. (See TRAC White Paper, Jan 15)

*OSD’s Tiger Team.* OSD CAPE evaluated ARI twice. The first assessment validated the Army’s ARI proposal for inclusion in the President’s Budget submission. The second assessment compared ARI with the Guard’s counterproposal after which CAPE concluded that ARI manages a higher demand with a smaller fleet, with less risk at the least cost; the Guard counterproposal provides more crews in partially equipped units, with greater tempo and training risk. (See OSD’s Council of Governors Presentation, 2 Dec 14)

*RAND’s ARI Process Assessment.* The RAND Corporation constructed a comprehensive history of ARI, to include the associated analyses, detailed implementation plans, and key decisions. This assessment is especially helpful to understand the broader fiscal context within which the Army developed ARI. The RAND assessment concluded that the ARI development process was transparent, collaborative, that the Army subjected ARI to rigorous analysis, and considered potential alternatives. The RAND assessment also points out that the independent arbiter within DOD, OSD-CAPE, reviewed the Army’s analysis and evaluated the plan, in all cases endorsing ARI. (Projected Publication: 1 May 15)

TAB A –

*Government Accountability Office (GAO)*. The FY15 National Defense Authorization Act directed the GAO to evaluate cost assessment methodology and wartime sufficiency analysis. The GAO concluded that the Army's cost estimates and demand and capability analysis used a reasonable methodology and was suitable for comparing the ARI and Guard proposals. GAO also confirmed that ARI is less expensive and better meets mission demands. (See GAO Report, 1 May 15)

**ARMY PERSPECTIVE:**

The Aviation Restructure Initiative is the Secretary of Defense-approved plan to reduce the size of the Army's aviation force in response to congressionally-mandated spending reductions associated with the Budget Control Act of 2011. ARI planning was collaborative and transparent and the resulting force is more capable than proposed alternatives. Further, ARI protects aviation modernization and optimizes the component mix to ensure the Army meets warfighting requirements, while providing civil authorities with the aviation force necessary to fulfill homeland missions.

TAB B - FY15 Budget Preview -  
Secretary of Defense Chuck Hagel



## **FY15 Budget Preview**

As Delivered by Secretary of Defense Chuck Hagel, Pentagon Press Briefing Room, Monday, February 24, 2014

First, let me acknowledge and thank Chairman Dempsey, Vice Chairman Winnefeld, our chiefs, our secretaries, who are here, as well as our Comptroller and our Acting Deputy Secretary of Defense Christine Fox for the work that they have put in over the few months in particular to get us to this point, where we have a budget that we are going to present to Congress next week.

I want to talk a little bit about that today. Chairman Dempsey will also add his remarks, but I am very grateful, and I know that President Obama is very grateful, to these men and women who have spent an awful lot of time – and the people they represent and their services – in putting this together.

I particularly want to note that the Comptroller, Bob Hale, this will be his last budget unless we call him back into duty after he goes to find an island somewhere and doesn't return calls. But I am particularly appreciative of his willingness to stay through this budget which was not an easy task for Bob Hale. You all know the kind of service that he has given this country and this department for many, many years. And to Bob Hale, thank you, and to all your team down there, we are grateful.

Today I am announcing the key decisions I have recommended to the President for the Defense Department's Fiscal Year 2015 budget and beyond.

These recommendations will adapt and reshape our defense enterprise so that we can continue protecting this nation's security in an era of unprecedented uncertainty and change. As we end our combat mission in Afghanistan, this will be the first budget to fully reflect the transition DoD is making for after 13 years of war – the longest conflict in our nation's history.

We are repositioning to focus on the strategic challenges and opportunities that will define our future: new technologies, new centers of power, and a world that is growing more volatile, more unpredictable, and in some instances more threatening to the United States.

The choices ahead will define our defense institutions for the years to come. Chairman Dempsey and I worked in a pragmatic and collaborative way to build the balanced force our nation must have for the future. I worked closely with the Chairman, Vice Chairman, Service Secretaries, and Service Chiefs in developing these recommendations, in a process that began with last summer's Strategic Choices and Management Review. I also want to recognize today the senior enlisted leaders in each of the services for their contributions and their involvement and their leadership and what they continue to do every day for our country, but in particular their help and input in crafting this budget. Our recommendations were guided by an updated defense strategy that builds on the President's 2012 Defense Strategic Guidance. As described in the upcoming Quadrennial Defense Review report, this defense strategy is focused on:

- Defending the homeland against all strategic threats;
- Building security globally by projecting U.S. influence and deterring aggression; and;

- Remaining prepared to win decisively against any adversary should deterrence fail.

To fulfill this strategy DoD will continue to shift its operational focus and forces to the Asia-Pacific, sustain commitments to key allies and partners in the Middle East and Europe, maintain engagement in other regions, and continue to aggressively pursue global terrorist networks.

Our reviews made two new realities very clear:

- First, the development and proliferation of more advanced military technologies by other nations that means that we are entering an era where American dominance on the seas, in the skies, and in space can no longer be taken for granted.
- Second, defense spending is not expected to reach the levels projected in the five-year budget plan submitted by the President last year.

Given these realities, we must now adapt, innovate, and make difficult decisions to ensure that our military remains ready and capable – maintaining its technological edge over all potential adversaries. However, as a consequence of large budget cuts, our future force will assume additional risks in certain areas.

In crafting this package, we prioritized DoD's strategic interests and matched them to budget resources. This required a series of difficult choices:

- We chose further reductions in troop strength and force structure in every military service – active and reserve – in order to sustain our readiness and technological superiority, and to protect critical capabilities like Special Operations Forces and cyber resources.
- We chose to terminate or delay some modernization programs to protect higher priorities in procurement, research, and development.
- And we chose to slow the growth of military compensation costs in ways that will preserve the quality of the all-volunteer force, but also free up critical funds needed for sustaining training, readiness, and modernization.

### **Fiscal Context and Future Spending Assumptions**

Before describing our specific recommendations, let me address the fiscal realities and assumptions behind our decision-making.

On March 1, 2013 – one year ago this week – steep and abrupt automatic spending cuts were imposed on DoD and other agencies across the government under the mechanism of sequestration. For DoD, these irresponsible cuts amounted to \$37 billion last fiscal year. These cuts came on top of the \$487 billion, ten-year defense spending reductions required by the Budget Control Act of 2011.

As sequestration was being imposed, the President submitted a Fiscal Year 2014 budget plan that would have fully repealed those cuts in favor of balanced deficit reduction. That would have

given DoD the resources needed to fully implement the President's January 2012 defense strategy and maintain a ready and modern force.

Two months ago, rather than fully repealing sequestration, Congress passed the Bipartisan Budget Act, which provided DoD with some relief in this Fiscal Year and for Fiscal Year 2015. The Bipartisan Budget Act gives DoD much-needed budget certainty for the next fiscal year. But, defense spending remains *significantly below* what the President requested in his Fiscal Year 2014 budget request and five year budget plan.

Under the spending limits of the Bipartisan Budget Act, DoD's budget is roughly \$496 billion this Fiscal Year – or \$31 billion below what the President requested. The law also limits DoD spending in Fiscal Year 2015 to \$496 billion, which is \$45 billion less than was projected in the President's budget request last year. So while DoD welcomes the measure of relief and stability that the [Bipartisan] Budget Act provided, it still forces us to cut more than \$75 billion over this two-year period, in addition to the \$37 billion cut we took last year and the Budget Control Act's 10-year reductions of \$487 billion. And sequestration-level cuts remain the law for Fiscal Year 2016 and beyond.

The President will soon submit a budget request that adheres to Bipartisan Budget Act spending limits for Fiscal Year 2015. But it is clear that under these limits the military will still face significant readiness and modernization challenges next year. To close these gaps, the President's budget will include an Opportunity, Growth and Security Initiative. This initiative is a detailed proposal that is part of the President's budget submission. It would provide an additional \$26 billion for the Defense Department in Fiscal Year 2015.

These additional funds would be paid for with a balanced package of spending and tax reforms, and would allow us to increase training, upgrade aircraft and weapons systems, and make needed repairs to our facilities. The money is specifically for bringing unit readiness and equipment closer to standard after the disruptions and large shortfalls of the last few years. I strongly support the President's proposal.

The President's budget for Fiscal Year 2015 will also contain a new five-year defense budget plan, mapping out defense programs through 2019. Over five years, this plan projects \$115 billion more in spending than sequestration levels.

The reason we are requesting this increase over sequestration levels is because the President and I would never recommend a budget that compromises our national security. Continued sequestration cuts would compromise our national security both for the short- and long-term.

Sequestration requires cuts so deep, so abrupt, so quickly, that we cannot shrink the size of our military fast enough. In the short-term, the only way to implement sequestration is to sharply reduce spending on readiness and modernization, which would almost certainly result in a hollow force – one that is not ready, that is not capable of fulfilling assigned missions. In the longer term, after trimming the military enough to restore readiness and modernization, the resulting force would be too small to fully execute the President's defense strategy.

The President's Fiscal Year 2015 budget offers a more deliberate and far more responsible approach that protects readiness and modernization, while maintaining a force large enough to fulfill our defense strategy – though with some added risk for some missions.

This plan balances the need to protect our national security with the need to be realistic about future budget levels. DoD has also completed a detailed plan should sequestration-level cuts return in Fiscal Year 2016 and beyond, as is the current law.

The reality of reduced resources and a changing strategic environment requires us to prioritize and make difficult choices. Some of those choices we must make now. For other choices – particularly those involving the ultimate size of our armed forces – we have built decision points into our budget plan. We will make these decisions when we have more clarity regarding future spending levels. Our budget will give us the flexibility to make different decisions based on different fiscal outcomes.

### **DoD's Approach**

Before we recommended any changes to the military's size or capabilities, we first focused on implementing management reforms and reducing DoD's overhead and operating costs.

Last summer I announced a 20 percent cut in DoD's major headquarters operating budgets, which is expected to save about \$5 billion in operating costs over the next five years. These efforts began in the Office of the Secretary of Defense and in the Joint Staff, but they will also include Service and Combatant Command headquarters. We are paring back contract spending, making targeted cuts in civilian personnel, improving the quality of financial information and taking other steps to become more efficient – in addition to continuing to implement the more than \$200 billion in overhead cuts DoD has submitted in the last three budget proposals.

We cannot fully achieve our goals for overhead reductions without cutting unnecessary and costly infrastructure. For that reason, DoD will ask Congress for another round of Base Realignment[and] Closure (BRAC) in 2017. I am mindful that Congress has not agreed to [our] BRAC requests of the last two years. But if Congress continues to block these requests even as they slash the overall budget, we will have to consider every tool at our disposal to reduce infrastructure. DoD has already been reducing infrastructure where we can. In Europe, where BRAC authority is not needed, we have reduced our infrastructure by 30 percent since 2000, and a European Infrastructure Consolidation Review this spring will recommend further cuts which DoD will pursue.

Reducing overhead will continue to be important, but the potential savings will not by themselves enough to meet targets under either the President's budget or sequestration levels. To meet reductions of the scale required, we had to carefully examine the military's force structure.

### **Force Structure and Modernization Decisions**

**Our force structure and modernization recommendations are rooted in three realities:**

- First, after Iraq and Afghanistan, we are no longer sizing the military to conduct long and large stability operations;
- Second, we must maintain our technological edge over potential adversaries;
- Third, the military must be ready and capable to respond quickly to all contingencies and decisively defeat any opponent should deterrence fail.

Accordingly, our recommendations favor a smaller and more capable force – putting a premium on rapidly deployable, self-sustaining platforms that can defeat more technologically advanced adversaries. We also preserved all three legs of the nuclear triad and will make important investments to preserve a safe, secure, reliable, and effective nuclear force.

The forces we prioritized can project power over great distances and carry out a variety of missions more relevant to the President’s defense strategy, such as homeland defense, strategic deterrence, building partnership capacity, and defeating asymmetric threats. They are also well-suited to the strategy’s rebalance to the Asia-Pacific region, to sustaining security commitments in the Middle East and Europe, and our engagement in other regions.

Our recommendations seek to protect capabilities uniquely suited to the most likely missions of the future, most notably special operations forces used for counterterrorism and crisis response. Accordingly, our special operations forces will grow to 69,700 personnel from roughly 66,000 today.

Let me now describe key recommendations for each of the military services.

### *Air Force*

For the Air Force, an emphasis on capability over capacity meant that we protected its key modernization programs, including the new bomber, the Joint Strike Fighter, and the new refueling tanker. We also recommended investing \$1 billion in a promising next-generation jet engine technology, which we expect to produce sizeable cost-savings through reduced fuel consumption and lower maintenance needs. This new funding will also help ensure a robust industrial base, a very strong and important industrial base – itself a national strategic asset.

To fund these investments, the Air Force will reduce the number of tactical air squadrons including the entire A-10 fleet. Retiring the A-10 fleet saves \$3.5 billion over five years and accelerates the Air Force’s long-standing modernization plan – which called for replacing the A-10s with the more capable F-35 in the early 2020s.

The “Warthog” is a venerable platform, and this was a tough decision. But the A-10 is a 40-year-old single-purpose airplane originally designed to kill enemy tanks on a Cold War battlefield. It cannot survive or operate effectively where there are more advanced aircraft or air defenses. And as we saw in Iraq and Afghanistan, the advent of precision munitions means that many more types of aircraft can now provide effective close air support, from B-1 bombers to remotely piloted aircraft. And these aircraft can execute more than one mission.

The A-10's age is also making it much more difficult and costly to maintain. Significant savings are only possible through eliminating the entire fleet, because of the fixed cost of maintaining the support apparatus associated with that aircraft. Keeping a smaller number of A-10s would only delay the inevitable while forcing worse trade-offs elsewhere.

In addition to the A-10, the Air Force will also retire the 50-year-old U-2 in favor of the unmanned Global Hawk system. This decision was a close call, as DoD had previously recommended retaining the U-2 over the Global Hawk because of cost issues. But over the last several years, DoD has been able to reduce the Global Hawk's operating costs. With its greater range and endurance, the Global Hawk makes a better high-altitude reconnaissance platform for the future.

The Air Force will slow the growth in its arsenal of armed unmanned systems that, while effective against insurgents and terrorists, cannot operate in the face of enemy aircraft and modern air defenses. Instead of increasing to a force of 65 around-the-clock combat air patrols of Predator and Reaper aircraft, the Air Force will grow to 55, still a significant increase. Given the continued drawdown in Afghanistan, this level of coverage will be sufficient to meet our requirements, and we would still be able to surge to an unprecedented 71 combat air patrols under the plan. DoD will continue buying the more capable Reapers until we have an all-Reaper fleet.

If sequestration-level cuts are re-imposed in 2016 and beyond, however, the Air Force would need to make far more significant cuts to force structure and modernization. The Air Force would have to retire 80 more aircraft, including the entire KC-10 tanker fleet and the Global Hawk Block 40 fleet, as well as slow down purchases of the Joint Strike Fighter – resulting in 24 fewer F-35s purchased through Fiscal Year 2019 – and sustain ten fewer Predator and Reaper 24-hour combat air patrols. The Air Force would also have to take deep cuts to flying hours, which would prevent a return to adequate readiness levels.

### *Navy and Marine Corps*

Next, the Navy: Under the President's budget plan, the Navy will launch an aggressive and ambitious effort to reduce acquisitions costs and maximize resources available to buy and build new ships. This will enable our ship inventory to continue to grow over the next five years to support the global demands for naval presence.

The spending levels proposed under the President's budget plan would also enable the Navy to maintain 11 carrier strike groups. However, we will have to make a final decision on the future of the George Washington aircraft carrier in the 2016 budget submission. If sequestration spending levels remain in place in Fiscal Year 2016, she would need to be retired before her scheduled nuclear refueling and overhaul. That would leave the Navy with 10 carrier strike groups. But keeping the George Washington in the fleet would cost \$6 billion – so we would have no other choice than to retire her should sequestration-level cuts be re-imposed. At the President's budget level, we would pay for the overhaul and maintain 11 carriers.

In order to help keep its ship inventory ready and modern under the President's plan, half of the Navy's cruiser fleet – or eleven ships – will be “laid up” and placed in reduced operating status while they are modernized, and eventually returned to service with greater capability and a longer lifespan. This approach enables us over the long-term to sustain and modernize our fleet of cruisers, which are the most capable ships for controlling the air defense of a carrier strike group.

Overall, the Navy's fleet will be significantly modernized under our plan, which continues buying two destroyers and two attack submarines per year, as well as one additional Afloat Staging Base. We have preserved the fleet's modernization programs and provided for increases in ship inventory over the next five years.

Regarding the Navy's Littoral Combat Ship, I am concerned that the Navy is relying too heavily on the LCS to achieve its long-term goals for ship numbers. Therefore, no new contract negotiations beyond 32 ships will go forward. With this decision, the LCS line will continue beyond our five-year budget plan with no interruptions.

The LCS was designed to perform certain missions – such as mine sweeping and anti-submarine warfare – in a relatively permissive environment. But we need to closely examine whether the LCS has the independent protection and firepower to operate and survive against a more advanced military adversary and emerging new technologies, especially in the Asia Pacific. If we were to build out the LCS program to 52 ships, as previously planned, it would represent one-sixth of our future 300-ship Navy. Given continued fiscal restraints, we must direct future shipbuilding resources toward platforms that can operate in every region and along the full spectrum of conflict.

Additionally, at my direction, the Navy will submit alternative proposals to procure a capable and lethal small surface combatant, generally consistent with the capabilities of a frigate. I've directed the Navy to consider a completely new design, existing ship designs, and a modified LCS. These proposals are due to me later this year in time to inform next year's budget submission.

If sequestration spending levels return in 2016 and beyond, we will be forced into much tougher decisions on the Navy surface fleet. Six additional ships would have to be laid up, and we would have to slow the rate at which we buy destroyers. The net result of sequestration-level cuts would be ten fewer large surface combatant ships in the Navy's operational inventory by 2023. Under sequestration spending levels, the Navy would also halt procurement of the carrier variant of the Joint Strike Fighter for two years.

The Marine Corps' inherent agility, crisis response capabilities, and maritime focus make it well-suited to carry out many priority missions under the President's defense strategy. Accordingly, if the President's budget levels are sustained for the next five years, we could avoid additional reductions in end strength beyond those already planned. Today the Marines number about 190,000, and they will draw down to 182,000. If sequestration-level cuts are re-imposed in 2016 and beyond, the Marines would have to shrink further to 175,000. Under any scenario, we will devote about 900 more Marines to provide enhanced embassy security around the world.

## *Army*

Finally, the Army: We seek a highly ready and capable Army, able to dominate any opponent across the full spectrum of operations. To achieve this, the Army must accelerate the pace and increase the scale of its post-war drawdown. Today, there are about 520,000 active-duty soldiers, which the Army had planned to reduce to 490,000. However, the Strategic Choices and Management Review and the QDR both determined that since we are no longer sizing the force for prolonged stability operations, an Army of this size is larger than required to meet the demands of our defense strategy. Given reduced budgets, it is also larger than we can afford to modernize and keep ready. We have decided to further reduce active-duty Army end-strength to a range of 440-450,000 soldiers.

I have also accepted the Army's recommendations to terminate the current Ground Combat Vehicle program and re-direct the funds toward developing a next-generation platform. I have asked the leadership of the Army and the Marine Corps to deliver new, realistic visions for a vehicle modernization by the end of this fiscal year.

The changes to end strength would result in a smaller Army, but would help ensure the Army remains well-trained and clearly superior in arms and equipment. While this smaller capacity entails some added risk, even if we execute extended or simultaneous ground operations, our analysis showed that this force would be capable of decisively defeating aggression in one major combat theater – as it must be – while also defending the homeland and supporting air and naval forces engaged in another theater against an adversary. If sequestration-level cuts are re-imposed in 2016, the active duty Army would have to draw down to an end strength of 420,000 soldiers.

The Army National Guard and Reserves will also draw down in order to maintain a balanced force. Today, the Army National Guard numbers about 355,000 soldiers and the Reserves about 205,000 soldiers. By 2017, under our recommendations, there would be 335,000 soldiers in the Army National Guard force structure and 195,000 in the Reserves. If sequestration returns in 2016, the Army National Guard would continue drawing down further, to 315,000. Army Reserves would draw down to 185,000.

**We have protected the National Guard and Reserves from cuts to the extent possible, but to maintain a ready and capable force at a time of fiscal constraints, no component of DoD can be entirely exempted from reductions.**

This five percent recommended reduction in Guard and Reserve soldiers is smaller than the 13 percent reduction in active-duty soldiers. I'm mindful that many in the Guard and Reserve community and in Congress have argued that the reserve component should be protected from cuts because they provide more troops at lower cost. If our priority was having the largest possible force in the event of a large-scale, prolonged war, that would be reasonable. However, our defense strategy calls for more than that. Surge capacity is just one factor, as we must prioritize readiness, capability, and agility. And while it is true that reserve units are less expensive when they are not mobilized, our analysis shows that a reserve unit is roughly the same cost as an active duty unit when mobilized and deployed.

Guardsmen and Reservists performed well in Iraq and Afghanistan. We could not have achieved what we did in either place without them. But experience shows that specialties requiring greater collective training to achieve combat proficiency and service integrations should reside in the full-time force, where these capabilities will be more ready and available to commanders. What best serves our national security is when Guard and Reserve units complement the active force.

That's why we've recommended Army Guard Apache attack helicopters be transferred to active-duty units. The Active Army will transfer Blackhawk helicopters to the National Guard, where they will bolster the Guard's needed capabilities in areas like disaster relief and emergency response.

These changes to the Guard's helicopter fleet are part of a broader realignment of Army aviation designed to modernize its fleet and make it highly capable and more affordable. The force will retire its Kiowas, and the "JetRanger" training helicopters used at Fort Rucker. The Active Army's overall fleet would decrease by about 25 percent, but it would be significantly modernized under the President's budget plan.

The Guard's fleet of helicopters would decline by eight percent, but it would gain new Blackhawks and the Army will sustain the Guard's fleet of Light Utility Helicopters. If sequestration-level cuts are re-imposed in 2016, the Army would have to cut 50 of these helicopters from the Guard force.

While any force reduction has some risk, the future Guard helicopter force will still serve as an important operational and strategic complement to our active duty force, while also being equipped for state and federal requirements for homeland defense, disaster relief, and support to civil authorities.

In making these difficult decisions on the Guard and Reserves, we affirmed the value of a highly capable reserve component, while keeping the focus on how our military can best meet future demands given fiscal constraints. We made choices based on strategic priorities, clear facts, unbiased analysis, and fiscal realities... and with the bottom line focus on how best we can defend the United States.

### **Military Compensation Decisions**

Beyond force structure and modernization, there is the challenge of DoD's personnel costs – civilian and military – which make up about half of all defense spending.

DoD has complied with Congressional direction to reduce our civilian personnel numbers, and worked to reshape our civilian workforce so that it has the skills needed for the future. Given the steps already taken to reduce civilian personnel costs – including a three-year pay freeze – no realistic effort to find further significant savings can avoid dealing with military compensation. That includes pay and benefits for active and retired troops, both direct and in-kind.

The primary way to reduce overall payroll spending has already been discussed – reducing the total number of people in uniform by bringing down the military's force structure and end-

strength. But since too small a force adds too much risk to our national security interests, we must also address spending on pay and benefits for service members, which since 2001 has risen about 40 percent more than growth in the private sector.

One of the reasons is that Congress boosted pay increases above the levels requested by the Department of Defense in budget submissions. New benefits, and increases in current pay and benefits, were also beyond what most active-duty personnel sought, expected, or had been promised when joining the military. As a U.S. Senator I supported these proposals. It was the right thing to do at the time, given the burdens being placed on our service members, the military's recruiting and retention challenges, and the fact that we had few constraints on defense spending.

But today DoD faces a vastly different fiscal situation – and all the services continue to meet recruiting and retention goals. This year we are concluding combat operations in America's longest war. A war that has lasted 13 years. We must now consider fair and responsible adjustments to our overall military compensation package.

For Fiscal Year 2015 we will recommend a one percent raise in basic pay for military personnel – with the exception of general and flag officers, whose pay will be frozen for one year. Basic pay raises beyond Fiscal Year 2015 will be restrained, though raises will continue.

We are also recommending a number of changes:

- We will slow the growth of tax-free housing allowances – which currently cover 100% of housing expenses – until they cover an average of 95% of housing expenses with a 5% out-of-pocket contribution. In comparison, the average out-of-pocket expenditure was 18% in the late 1990s. We will also no longer reimburse for renter's insurance.
- Over three years, we will reduce by \$1 billion the annual direct subsidy provided to military commissaries, which now totals \$1.4 billion. We are not shutting down commissaries. All commissaries will still get free rent and pay no taxes. They will be able to continue to provide a good deal to service members and retirees – much like our post exchanges, which do not receive direct subsidies. Overseas commissaries and those in remote locations will continue receiving direct subsidies.
- And we will simplify and modernize our TRICARE health insurance program by consolidating plans and adjusting deductibles and co-pays in ways that encourage members to use the most affordable means of care – such as military treatment facilities, preferred providers, and generic prescriptions. We will ask retirees and some active-duty family members to pay a little more in their deductibles and co-pays, but their benefits will remain affordable and generous ... as they should be.

To protect the most vulnerable, under this plan medically retired service members, their families, and the survivors of service members who die on active duty would not pay the annual participation fees charged to other retirees, and would pay a smaller share of the costs for health care other than retirees.

Our proposals do not include any recommended changes to military retirement benefits for those now serving in the Armed Forces. We are awaiting the results of the Military Compensation and Retirement Modernization Commission, which is expected to present its report in February 2015 we will await the commission's report before pursuing reforms in that area. But DoD continues to support the principle of "grandfathering" for any future changes to military retirement plans.

The adjustments to military compensation presented in this year's budget plan will enable each of the military services to invest more in critically important modernization and readiness while still allowing them to recruit and retain a high-quality force and offer deserved, generous, competitive, and sustainable benefits. The savings will enable us to sustain a well-trained, ready, agile, motivated and technologically superior force.

Although these recommendations do not cut anyone's pay, I realize they will be controversial. Congress has taken some important steps in recent years to control the growth in compensation spending, but we must do more.

A holistic and comprehensive approach must be taken to compensation changes. Continuous piecemeal changes will only magnify uncertainty and magnify doubts about our service members, with our service members, among our service members about whether promised benefits will be there in the future.

Instead, we must keep faith with our men and women in uniform, and fulfill the promises made. America has an obligation to make sure service members and their families are fairly and appropriately compensated and cared for during and after their time in uniform. We also have a responsibility to provide our troops with the finest training and equipment possible – so that whenever America calls upon them they are prepared with every advantage we can give them so that they will return home safely to their families. The President's budget fulfills both of these promises to our service members and their families.

Our proposals were carefully crafted to reform military compensation in a fair, responsible, and sustainable way. We recognize that no one serving our nation in uniform today is overpaid for what they do for our country. But if we continue on the current course without making these modest adjustments now, the choices will only grow more difficult and painful down the road. We will inevitably have to either cut into compensation even more deeply and abruptly, or we will have to deprive our men and women of the training and equipment they need to succeed in battle. But, either way, we would be breaking faith with our people. And the President and I will not allow that to happen.

### **Risks**

The recommendations I have described will help bring our military into balance over the next decade and responsibly position us for an era of both strategic and fiscal uncertainty. They will allow the military to protect our country and fulfill the President's defense strategy – but with some increased levels of risk.

We should be clear about these risks.

Over the near-term, because of budget limitations even under the Bipartisan Budget Act, the military will continue to experience gaps in training and maintenance – putting stress on the force and diminishing our global readiness even as we sustain a heightened alert posture in regions like the Middle East and North Africa. The additional \$26 billion provided to DoD by the President’s Opportunity, Growth and Security Fund would allow us to continue to restore and sustain readiness – helping to mitigate this risk.

We also face the risk of uncertainty in a dynamic and increasingly dangerous security environment. Budget reductions inevitably reduce the military’s margin of error in dealing with these risks, as other powers are continuing to modernize their weapons portfolios, to include anti-air and anti-ship systems. And a smaller force strains our ability to simultaneously respond to multiple major contingencies. But with the President’s budget our military will still be able to defeat any aggressor.

We can manage these anticipated risks under the President’s budget plan, but they would grow significantly if sequester-level cuts return in Fiscal Year 2016, if our reforms are not accepted, or if uncertainty on budget levels continue. As I’ve made clear, the scale and timeline of continued sequestration-level cuts would require greater reductions in the military’s size, reach and margin of technological superiority. Under sequestration spending levels, we would be gambling that our military will not be required to respond to multiple major contingencies at the same time.

That’s why our recommendations beyond Fiscal Year 2015 provide a realistic alternative to sequestration-level cuts, sustaining adequate readiness and modernization most relevant to strategic priorities over the long-term. But this can only be achieved by the strategic balance of reforms and reductions the President and I will present to the Congress next week. This will require the Congress to partner with the Department of Defense in making politically difficult choices – which I will address more specifically when I testify before Congress.

As I weighed these recommendations, I have, as I often do, looked to the pages of American history for guidance. In doing so, an admonition by Henry Stimson stood out. Writing after World War II, Roosevelt’s Secretary of War during that time, said that Americans must “act in the world as it is, and not in the world as we wish it were.”

Stimson knew that America’s security at home depended on sustaining our commitments abroad and investing in a strong national defense. He was a realist. This is a time for reality. This is a budget that recognizes the reality of the magnitude of our fiscal challenges, the dangerous world we live in, and the American military’s unique and indispensable role in the security of this country and in today’s volatile world. There are difficult decisions ahead. That is the reality we’re living with.

But with this reality comes opportunity. The opportunity to reshape our defense enterprise to be better prepared, positioned and equipped to secure America’s interests in the years ahead. All of DoD’s leaders, these men and women sitting here today, and I have every confidence that this will be accomplished.

Thank you.

TAB C - OSD-CAPE Tiger Team Council  
of Governors' Briefing



# **AC/RC Tiger Team on Aviation Restructure Initiative Council of Governors VTC**



2 December 2014

# Tiger Team

## Purpose

- The Deputy Secretary tasked CAPE to set up an interdisciplinary Tiger Team following the July Council of Governors meeting
- The charter is to analyze the ARI and the National Guard alternative and identify areas of agreement and disagreement

## Membership

- Office of the Secretary Defense, Active Army, National Guard Bureau, and consultants from RAND and IDA

## Engagement

- The group has met weekly since the end of July, to include:
  - 15+ general officer level and 30+ working group sessions
  - 2 update briefs to NGA representatives and TAGs from 10+ states
  - 5 subject area deep-dives

# What the Tiger Team Accomplished

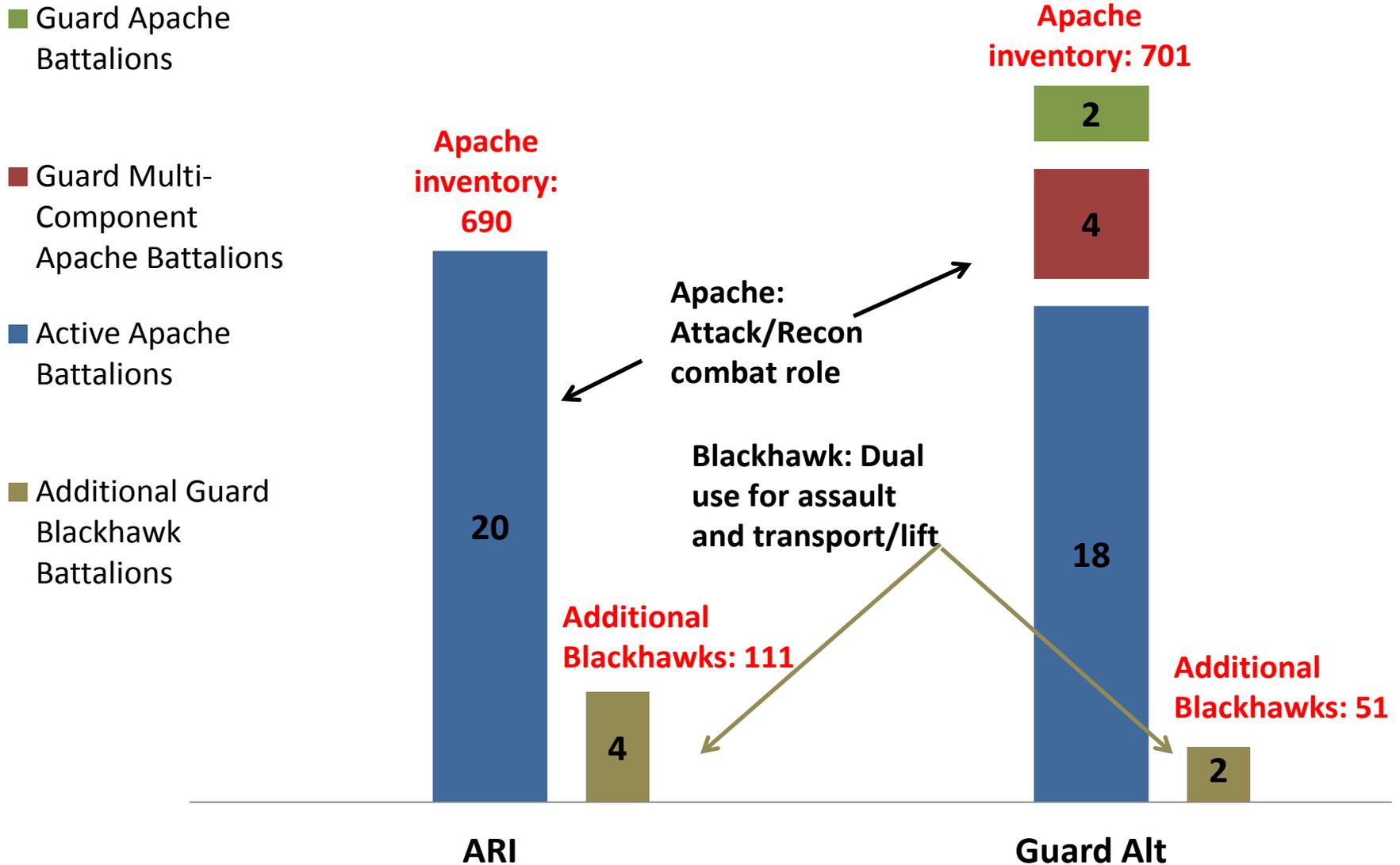
- Work Completed
  - Defined ARI and Guard options in detail
  - Defined metrics and collected data
  - Defined peacetime and wartime demand
  - Defined training requirements
  - Calculated costs of each option
- Areas of Agreement
  - Number of pilots, aircraft, and battalions in each option
  - Analysis approach and data sources, including the cost methodology
  - Mobilization and deployment schedule (tempo) of Apache battalions
- Areas of Continued Disagreement
  - Feasibility of Guard units sustaining wartime-like tempo in peacetime
  - The amount of training Guard units need to deploy with Active units
  - Selected costs
  - Need for Korea equipment sets in the ARI option

# Summary of Findings

Metric	ARI	Guard Alternative
Manning	Smaller total force: fully mans 20 Active Apache battalions	Larger total force: fully mans 24 Apache battalions (18 Active and 6 Guard)
Equipping	Fully equips all battalions + 2 battalion-size sets for Korea deployment	Fully equips 20 battalions and partially equips 4 battalions; no Korea sets
Training	Envisions unit training more complex than in OIF/OEF	Proposes training timeline considerably shorter than in OIF/OEF
Peacetime Tempo	High tempo: Active Apache battalions are deployed for 9 months and not deployed for 18 months	High tempo: Guard Multi-Component battalions are mobilized for 12 months and not mobilized for 36-48 months
Cost	Annual: base case One-time: \$77M (FY16-19)	Annual: additional \$89M - \$176M One-time: \$150M (FY16-18); \$420M (FY25-26)

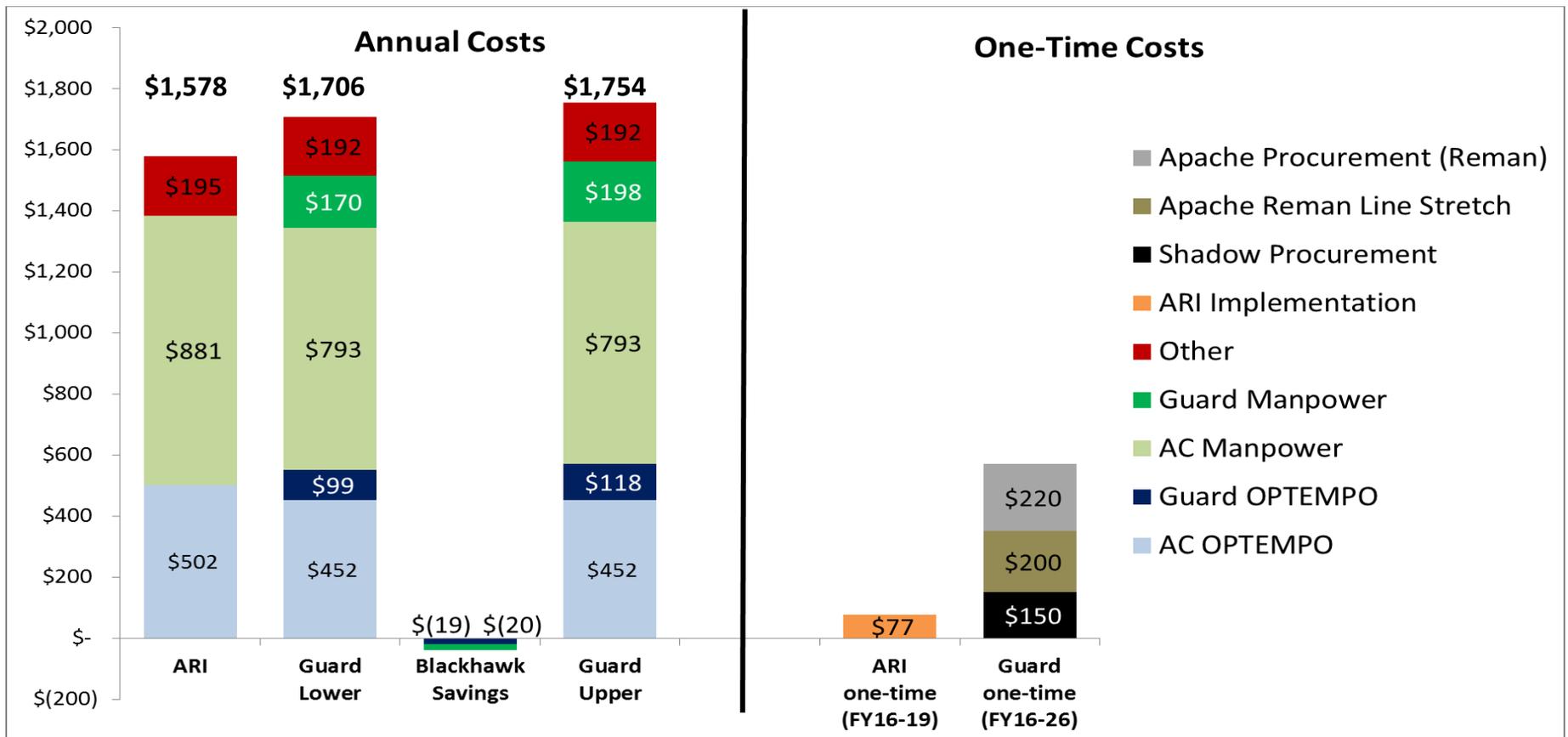
Guard Alternative provides more force structure but has risk in equipping, training, and tempo, and costs more

# Force Structure of ARI and Guard Alternative



# Cost Comparison

OSD CAPE



- Guard option annual costs: \$89-\$176M more than ARI
  - 6-11% growth in Attack-Recon costs; 2-3% to total Army Aviation operating costs
  - Range spans Guard Lower with Blackhawk divestment to Guard Upper with Blackhawk fleet retention
- “Guard Lower”: assumes Guard plan for pre-deployment training (*Guard agreement*)
- “Guard Upper”: assumes more Guard training based on OIF/OEF experience (*Active agreement*)
- One-time costs: pilot re-qualification, Apache transport in ARI; Shadow UAV, Apache buy in Guard Alt

# Peacetime Tempo and Training

- Active Apache battalions will be deployed for 9 months within each 27 month period
  - Somewhat less stressing than OIF/OEF wartime tempo
- Most of the Guard Apache battalions will be mobilized for 12 months within each 48-60 month period
  - Comparable or even more stressing than OIF/OEF wartime tempo
- Guard Alternative proposes pre-deployment training that is half as long as the training Guard received for OIF/OEF deployments
  - Risks: having to mobilize for more than 12 months, increased training tempo prior to mobilization, and/or must fill Guard slot with Active units

# Bottom Line

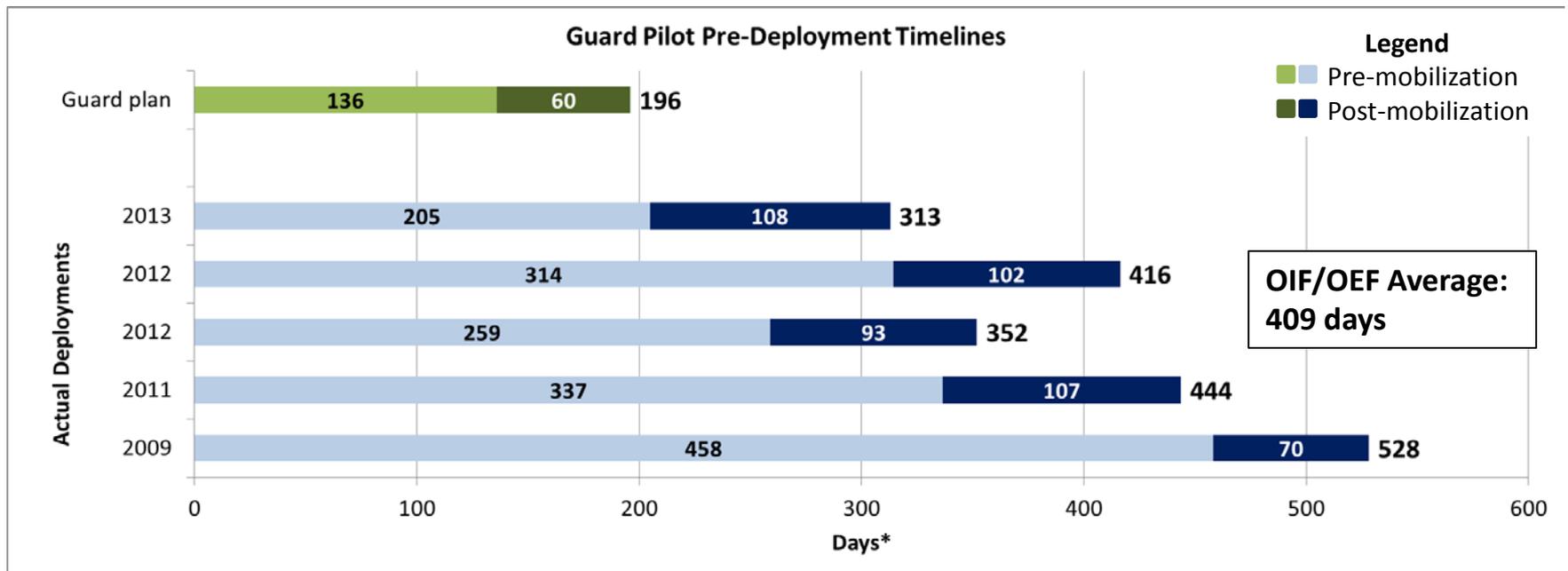
- ARI manages high demand with a smaller fleet: units turn at high tempo with robust training for complex operations
  - Not sized for prolonged stability operations
- The Guard Alternative provides more crews and units, with less disruptive force structure changes
  - But some units are partially equipped, the total option costs more and involves the risk below
- The Guard Multi-Component concept presents tempo and training risk
  - Frequent Guard deployments—high stress on the force in peacetime
  - Turns on an aggressive training schedule not demonstrated in OIF/OEF

# Backups



# Training Time

- The Guard Alternative assumes Guard Apache units associated with the Multi-Component CABs can prepare to deploy in 196 days over 4 years
- Data from OIF/OEF indicates considerably more training days are needed
  - Risks extending mobilization beyond 12 months and/or increasing training tempo prior to mobilization



\*Post-mobilization data based on actual days; Pre-mobilization data based on paid days less O1/W1s, non-deployers, AFTPs, AGRs, and those in training pipeline

# Metrics Summary

Metric	ARI	Guard Option
Fully Manned BNs	20 AC	24 (18 AC + 6 Guard)
Fully Equipped BNs / Partially Equipped BNs / Equipment Sets	20 / 0 / 2	20 / 4 / 0
Assigned Crews	480	576
Total Inventory / Aircraft in operational units	690 / 480	701 / 552
Deploy:Dwell (AC) or MOB:Dwell (Guard MC) to meet peacetime demands	About 1:2 (AC)	About 1:2 (AC) 1:3 – 1:4 (Guard)
Number of Apache BNs to achieve AC availability	1 @ \$69M	2 @ \$40M-\$50M each*
CAB Capacity at DoD Deploy:Dwell Policy (AC and MC CAB 1:2)	3.0	2.8 – 3.0
Annual Cost	\$1.58B	\$1.67 - \$1.75B
One-time Cost	\$77M (FY16-19)	Shadow: \$150M (FY16-18); Apache: \$420M (FY25-26)

\*Guard also has 2 additional, typically lower readiness, Apache BNS @ \$33M each

# Apache Pilot Experience

Average Flying Hours per Apache Pilot in Combat Units	Active Component	Guard
Total Flying Hours	1,091	1,016
Combat Flying Hours	593	280
% of Pilots with Combat Experience	77%	65%
Night Vision Flying Hours	319.5	255.9

# Strategic View

- High demand + smaller force size = high use of attack helicopters
  - Divestment of Kiowa Warrior, which was prompted by budget constraints, reduces the supply of forces vs. continued high demand
  - Apache units must operate at high tempo in peacetime to meet demand
- We expect future conflicts to require more complex air/ground training
  - OIF/OEF: typically 2 Apaches teamed in support of ground missions
  - Future: larger formations (8+ Apaches) teamed with UAVs and ground units
- We expect to have less time to prepare for war, so the force must be ready
  - OIF/OEF: 1-2 years of notice for deployment
  - Future conflicts: weeks of notice for deployment
- We must keep costs as low as possible
  - Army budget reduced \$10.5B per year compared to FY14 budget



TAB D - Aviation Force Structure  
Sufficiency Risk Analysis  
(TRADOC Analysis Center)



# **Aviation Force Structure Sufficiency Risk Analysis**

**January 2015**



## **White Paper**

**Sensitivity Analysis**

**TRADOC Analysis Center  
255 Sedgwick Avenue  
Fort Leavenworth, KS 66027-2345**

**Close Hold / Pre-Decisional / FOUO**

**Background.** The Aviation Restructure Initiative (ARI) started in January 2013. Initially led by the U.S. Army Aviation Center of Excellence, the effort eventually transitioned to a Task Force (TF), led by key Aviation elements within Headquarters, Department of the Army (G8-FDV and DAMO-AV). This TF was charged with developing options to reorganize Army Aviation to meet a wide range of potential operational and strategic demands within a fiscally constrained environment. As the Army debated potential solutions, two alternatives emerged within the context of this force design effort: the ARI option and an option proposed by the Army National Guard.

As the Aviation community developed alternative options for Army Aviation force structure, several key factors emerged for inclusion in an overall assessment. Within the Army's decision space, these factors included (but were not limited to): annual operating costs, acquisition costs, pilot training, unit readiness, force generation capacity against projected demands, acquisition strategies, aircraft distribution plans, aircraft divestitures, and balanced OPTEMPO burden.

A previous analytical white paper dated 7 October 2014 provided a comparison of the force generation capacity. This paper addressed the comparison by answering the following question:

*Does the Army National Guard Aviation design option provide greater capacity (versus the ARI option) to meet demands over time?*

To determine whether the best possible conditions allowed the ARNG option to outperform ARI, the analysis incorporated assumptions favorable to the ARNG option (e.g., early warning prior to hostilities, time required for mobilization, accounting of aircraft). Through a combination of sufficiency modeling and mathematical testing, the analysis demonstrated that the ARNG option did not out-perform the ARI option. In fact, in most key areas, the ARI option outperformed the ARNG option. The study team briefed these results to representatives from ARNG, OSD-CAPE, RAND, and the General Accounting Office (GAO).

During subsequent engagements, OSD-CAPE and GAO analysts asked questions that the initial analysis did not consider. The initial analysis focused on which option delivered the greatest capacity. The questions in subsequent engagements dealt with risk. Specifically, the questions raised were:

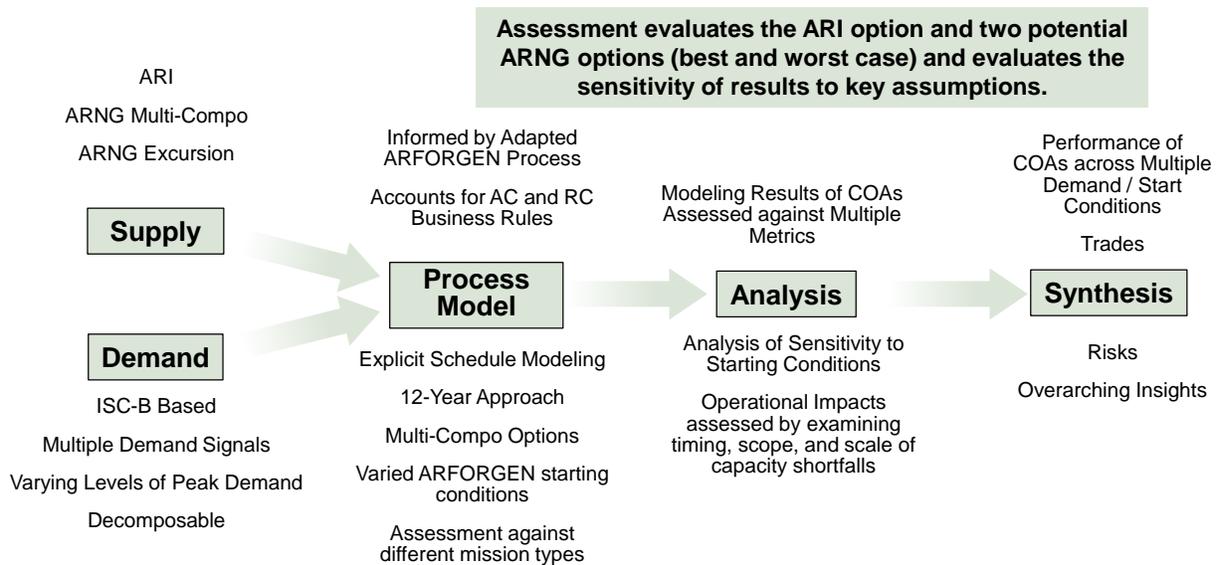
*What are the sensitivities of the results to less favorable assumptions? ...and*

*What are the operational risks associated with adoption of the ARNG design option versus the ARI design option?*

**Purpose.** This paper informs these two questions and provides comparative analysis on the sufficiency of potential Aviation Force Structure design options to meet operational demands over time. Specifically, the analysis examines the implications of various force design options by assessing the ability to meet projected demands and then identifying the scope, scale, and timing of potential attack aviation capacity shortfalls.

**Approach.** This analysis leverages and expands on the modeling approaches used in the first sufficiency analysis to answer the study questions. The analysis also leverages assessments from the OSD-led AC/RC Aviation Tiger Team to gain an improved understanding of AH-64 aircraft

tracking, multi-compo resourcing options, and resulting force design alternatives.<sup>1</sup> Figure 1 provides a depiction of the basic study approach which includes five main steps. Subsequent sections provide an overview of each of these steps.



**Figure 1. Approach for the Aviation Sufficiency Risk Analysis.**

**Supply.** The analysis presented in this paper compares three alternatives: 1) Aviation Restructure Initiative (ARI) recommendation, 2) Army National Guard multi-component proposal adjusted to account for a 3:1 rotation of ARBs to each multi-component CAB<sup>2</sup>, and 3) an excursion to the ARNG option that fills critical aircraft shortfalls existing within the ARNG option. Table 1 provides a summary of the three options assessed in this paper.

**Table 1. Aviation Force Structure COAs.**

COAs (AC / RC Mix)	AC Force CAB Types	RC Force CAB Types
<b>ARI</b>	10 Full Spectrum (FS) Combat Aviation Brigades	10 Combat Support Aviation Brigades (CSAB), 2 Theater Aviation Brigades (TAB)
<b>ARNG Multi-Compo (MC) (3-1 Rotation)</b>	8 FS, 2 Multi-Compo (MC)	6 Attack Reconnaissance Battalions (ARB) as multi-compo force providers, 8 CSAB, 2 TABs
<b>ARNG Excursion</b>	8 FS	2 FS , 8 CSAB, 2 TABs

<sup>1</sup> The study leveraged information from OSD-CAPE’s AC/RC Aviation Tiger Team Preliminary Findings briefing dated 28 October 2014. This briefing helped to define the ARNG force design option for this second round of analysis.

<sup>2</sup> OSD-CAPE led AC/RC Aviation Tiger Team Preliminary Findings briefing dated 28 October 2014 reported (slide 10) that a 3:1 ratio of round-out ARBs to each multi-compo CAB is required to provide adequate round-out units.

The first two options are described in existing literature<sup>3</sup> associated with the Army Aviation restructuring debate. The third option is included in this paper as an excursion to address key aircraft shortfalls existing within the ARNG multi-compo option. Table 2 provides an accounting of the AH-64 aircraft.<sup>4</sup> As seen in Table 2, the ARNG multi-compo option does not resource the two AC battalion equipment sets on the Korean Peninsula (red arrow) and does not fully resource the Boeing Mesa remanufacturing line (orange arrow).

**Table 2. AH-64 Aircraft accounting for ARI and ARNG options.**

	<b>ARI FY19</b>	<b>Guard Option FY19</b>
<b>AC + RC (Multi-Compo) + RC Apache Manned Battalions</b>	<b>20 + 0 + 0 = 20</b>	<b>18 + 2 + 4 = 24</b>
<b>Apaches in: AC Battalions (24 a/c per)</b>	<b>480</b>	<b>432</b>
<b>RC BNs in Multi-Compo CABs (24 a/c per)</b>	<b>0</b>	<b>48</b>
<b>RC BNs in RC CABs (18 a/c per)</b>	<b>0</b>	<b>72</b>
<b>Equipment Set (2x AC BN)</b>	<b>48</b>	<b>0</b>
<b>Training Aircraft</b>	<b>80</b>	<b>80</b>
<b>Test Aircraft</b>	<b>15</b>	<b>12</b>
<b>Readiness Float</b>	<b>67 (10%)</b>	<b>57 (8%)</b>
<i>Depot Maintenance (CCAD)</i>	6	6
<i>Boeing Mesa Remanufacture</i>	54	48
<i>Average Attrition Per Year</i>	3	3
<i>Other Operational Float Aircraft</i>	4	0
<b>Required Apaches</b>	<b>690</b>	<b>701</b>

Failure to resource the Korean Peninsula equipment set could potentially cause significant deployment and/or stationing issues. The ARNG excursion included in this paper assumes that the AC would be forced to resource that equipment set from existing aircraft, resulting in only 16 AC attack helicopter battalions (8 CABs). This excursion would then use the ARNG ARBs to form two ARNG FS CABs to offset the loss of the multi-compo CABs. The remanufacturing line shortfall would be resourced from existing aircraft. It is important to note that the ARNG has not offered this excursion as an option, rather, it is included in this analysis as it represents a reasonable option if the loss of the PACOM equipment set and other aircraft shortfalls are viewed as unacceptable from a risk perspective. Annex A provides a potential mapping of aircraft to each of the three options considered in this paper.

Note: The OSD-led AC/RC tiger team concluded that the original ARNG option (8 AC FS CABs, 2 AC CABs MC, 8 RC CSABs<sup>5</sup>, 2 RC FS CABs, 2 RC ARBs (MC round-out units)) was not feasible due to insufficient numbers of round-out ARBs. Their analysis concluded that the

<sup>3</sup> AC/RC Aviation Tiger Team Preliminary Findings, 28 October 2014.

<sup>4</sup> Table 2 is drawn from slide #9 of the AC/RC Aviation Tiger Team Preliminary Findings briefing dated 28 October 2014.

<sup>5</sup> CSAB ~ Combat Support Aviation Brigade, also referred to as ECAB - Expeditionary Combat Aviation Brigades.

multi-compo CAB required “all 6 ARNG ARBs (as round-outs) to support the concept.” While not included in the main body of this paper, Annex B provides full comparative analysis of the original ARNG option.

**Demand.** To establish operational and strategic context, the study team relied on scenario conditions drawn from (and compliant with) OSD-approved Support to Strategic Analysis (SSA) scenarios. To establish Aviation brigade demands, the study team developed a representation of approved force sizing scenarios derived from OSD’s Integrated Security Construct (ISC). As the study team built the demand signals, it was imperative that the selected scenarios possessed key characteristics; use of the ISCs helped ensure that this was the case. Key characteristics included:

- Credibility – the selected scenarios needed to represent reasonable demands that would be accepted by the Army, Office of the Secretary of Defense (OSD), and Joint stakeholders.
- Wide Range of Operations – the selected scenarios needed to stress the force with demands and conditions that span the full range of projected conflict. This ensured a rich analytical environment for both tactical- and strategic-level analyses.
- Extended Time Horizons – the scenarios needed to stress the force over time to enable strategic-level sufficiency analysis.

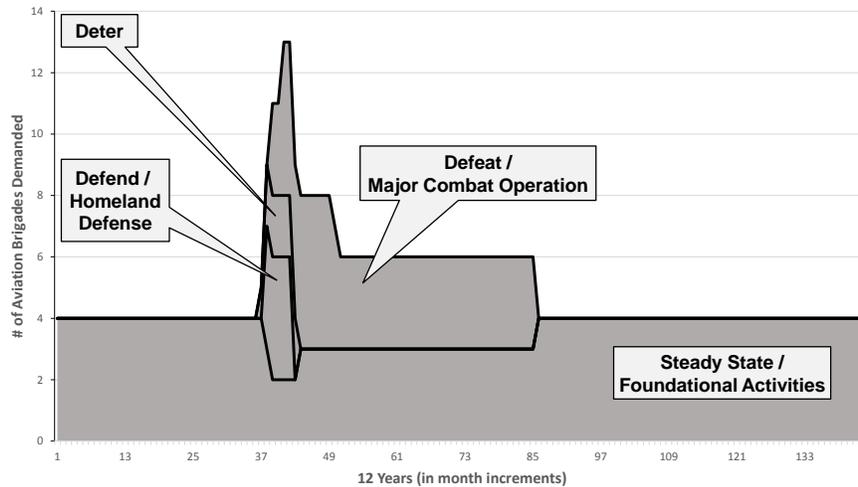
The study team reviewed SSA scenarios and, based on overall suitability, selected ISC-Bravo (B) as a baseline construct for projected demands. As it relates to this study, ISC-B spans a 12-year horizon and consists of four mission types: 1) foundational activities (FA), 2) major combat operations (MCO), 3) deterrence, and 4) homeland defense (HLD) missions.

The baseline demand for this analysis leveraged a traditional depiction of defend/defeat/deter from ISC-B, drawn from the approved SSA scenarios. The 12-year demand starts with a period of foundational activity demands. This period is followed by a deter mission that quickly leads into a homeland defense event and an MCO. The MCO, which requires a surge in Aviation, is eventually followed by a resumption of foundational activities. The development of this demand signal drew from work conducted as part of the Army’s previous End-Strength Analysis and the quadrennial defense review; as such the demand development involved coordination with DAMO-SS, PAED, and the Center for Army Analysis. Note that the details of the demands are classified, but for the purposes of this report, the study team uses generic naming conventions to retain an unclassified designation for broader dissemination and discussion.<sup>6</sup>

The study team used a combination of multi-service force deployment (MSFD) documentation and Total Army Analysis (TAA) rules of allocation to determine the number of Aviation brigades required for each of the demands in the 12-year signal. Figure 2 depicts the resulting 12 year demand signal.

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<sup>6</sup> Send requests for classified scenario details to HQ TRAC, 913-684-7585.



**Figure 2. ISC-B Derived Baseline Demand Signal.**

Figure 2 provides the analytical baseline demand signal; the study team also modeled additional demand signals derived from ISC-B, which included excursions that assessed the capacity to meet a second MCO occurring after the completion of the first MCO. Examining this range of potential futures enabled the study team to better understand capacity shortfalls and risks associated with differing levels of demand.

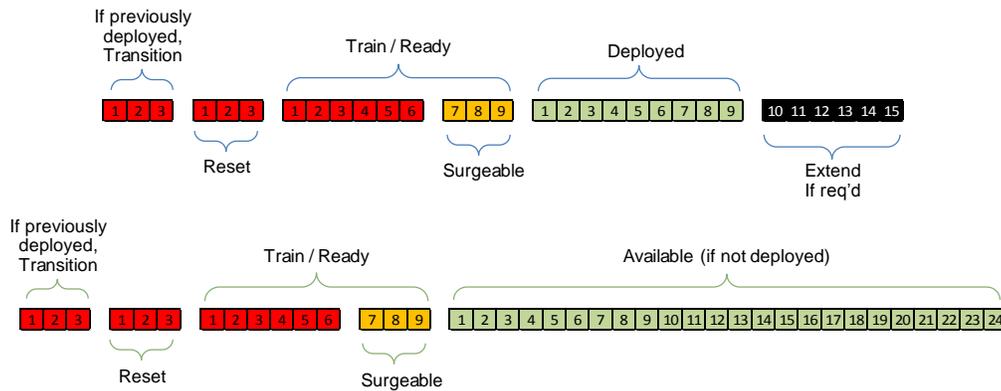
**Process Model.** Once the study team developed and established the supply (aviation units) and demand elements for the analysis, it was necessary to evaluate apportionment of the supply options against the demands over time. This required modeling that incorporated the force generation rules the Army would use to meet operational demands.

Army Force Generation (ARFORGEN), in accordance with the Army Total Force Policy, provides the rules by which the Total Force (Active Army, Army National Guard, and the Army Reserve) is apportioned to meet demands. By generating Total Force capabilities, the Army seeks to precisely and predictably support global and regional national strategies and Joint Force commitments. The intent is for all components to be similarly manned, equipped and trained to support Combatant Commander requirements with scalable and tailorable force packages.<sup>7</sup>

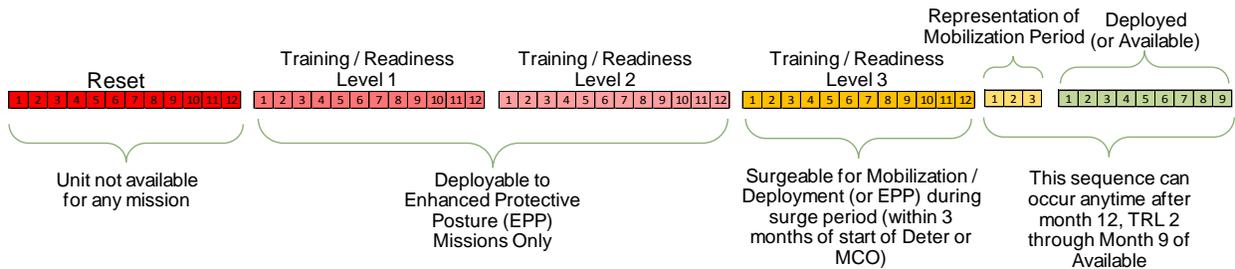
The following provides a description of sixteen key force generation rules used in the assessment of the Aviation restructuring options:

<sup>7</sup> FORSCOM ARFORGEN Adaptation Briefing to CSA, May 2012.

1. Active Army CAB readiness cycle / process (in months)



2. Army National Guard Aviation brigade readiness cycle / process (in months). The baseline analysis assumed 3 months mobilization for attack and lift units. Analytical excursions extended the mobilization time for attack units to 4 months.



Note: If units are replaced on deployment by another unit, the last month is tracked as RIP/TOA.<sup>8</sup>

3. The Army will have a period of warning prior to the outbreak of hostilities: this is represented as a look-ahead-capability in the model and allows more efficient management of readiness. The baseline analysis assumed 90 days warning, but excursions assumed warning of only 30 days.
4. The Army will not plan to go below a BOG / MOB:Dwell<sup>9</sup> surge ratio of 1:1 (AC) and 1:3 (RC).
5. Mission priority of fill is Major Combat Operations (MCO), Deter, Enhanced Protective Posture (EPP) / homeland defense, then Foundational Activities.
6. Outside MCO periods, AC deployments are 9 months and RC MOBs are 12 months.
7. During any MCO period, all AC deployments are planned as 12 month rotations, but can extend up to 15 months when necessary.
8. HLD/EPP missions can be met with any RC CAB that is not deployed or in Reset.
9. RC CABs will mobilize for the duration of EPP missions, up to 24 months (this extended mission time is not required within the baseline demands as EPP length is 5 months).

<sup>8</sup> RIP/TOA ~ “Relief in Place / Transfer of Authority” which represents a period of overlap between units departing from theater and the replacement unit.

<sup>9</sup> BOG:Dwell / MOB:Dwell refers to a ratio of Boots on Ground time to Dwell time (AC) and Mobilization time to Dwell Time (RC).

10. In the event of an MCO or Deter mission inside a specific theater, any forward deployed CAB conducting foundational activities for that COCOM will be used against that demand. (Planned cumulative deployment of no more than 15 months).
11. Sufficient strategic force flow ensures unhindered force flow through the ports of embarkation, as such, the model assumes the Commander's required delivery date is met.
12. Per FORSCOM guidance/direction, unmet mission demands that are 2 months or less in duration can be met through human intervention, the "art" of ARFORGEN.
13. Allocation priority will be selected in the following manner: 1) CAB type preference, 2) CAB component preference, 3) CAB with most dwell time.
14. Directed AC/RC Heavy CAB and FS CAB demands will only be filled by that type and compo and if none are available, the demand will be unmet (does not occur in baseline demand, requires very high level of foundational activity demands for occurrence).
15. Demand parameters will determine which unit will be assigned to each mission (units will not be fenced for a specific mission).
16. Multi-component (MC) units may deploy against specific demands when both the AC and RC pieces of the unit are eligible for deployment. These specific units are paired together for deployment and will follow their respective ARFORGEN cycles. MC units are treated as AC units for allocation priority.

**Analysis.** The assessment effort leveraged a high-fidelity supply versus demand scheduling model<sup>10</sup> to enable analysis of the two Aviation restructuring options against varied start conditions. The model enabled the study team to make rapid changes to supply, demand, and the business rules governing global force management. The model also produced a variety of outputs in the form of graphs, charts, and tables that provided a robust capability for visualizing sufficiency results. As part of the Aviation analysis, the study team also added functionality to the model to systematically vary the aviation units' starting conditions. This functionality allowed examination of the sensitivity of sufficiency results to the units' position in the ARFORGEN process at the start of the 12-year demand period and it provided the study team the ability to produce multiple runs (up to 60) to generate sample data for estimation of expected performance. Using multiple runs also provided the robust results necessary to gain a clearer understanding of the timing, scope, and scale of missed demands.

**Findings.** This analysis examines the risk associated with adopting the ARNG option (or the analytical excursion option). To conduct this assessment, the study considered higher risk assumptions within the process modeling. Specifically, the analysis examined cases where there is less early warning prior to major combat operations (i.e., 30 days versus 90 days early warning) and cases where additional time for mobilization (4 versus 3 months) may be required for ARNG ARBs. The analysis tested these cases against both the baseline and a two-MCO demand signal.

*What are the expected outcomes?* Given the ARFORGEN model described above and the force design alternatives, simple mathematical calculations offer a reasonable estimate of the anticipated modeling outcomes.

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<sup>10</sup> The model was built with the System for Periodically Apportioning Demands (SPADES), which was designed to support quick-turn modeling efforts for supply and demand problems incorporating the element of time.

**Table 3. Deployment Times and Readiness Cycle Lengths.**

Type Deployment	Months	Length of Cycle	Months
AC Deployment	15	AC Cycle	27
MC Deployment	9	MC Cycle	21
RC Deployment	9	RC Cycle	48

Table 3 shows the maximum number of months (within MCO) that a particular unit type can be deployed under the most aggressive force generation conditions (e.g., deploying early and extending, if allowed) and the total length of that resulting force generation cycle.

**Table 4. Mathematical Computation of COA Capacities.**

	Organizations			Capacity			Capacity	% Capacity (vs ARI)
	AC FS CABs	MC FS CABs	ARNG FS CABs	AC FS CABs	MC FS CABs	ARNG FS CABs		
ARI	10	0	0	5.56	0.00	0.00	5.56	100%
ARNG MC (3-1)	8	2	0	4.44	0.86	0.00	5.30	95%
ARNG Excursion	8	0	2	4.44	0.00	0.38	4.82	87%

Given the data in Table 3 and the organizations under consideration, Table 4 describes the expected capacity generated by each of the three force design options. These calculations provide a reasonable approximation of the relative capacity provided by each option and should be consistent with trends obtained by modeling stressful demand situations.

*What were the modeling results?* While the mathematical calculations shown above are useful in understanding expected outcomes, modeling a range of potential futures provides many insights on the options' ability to meet demand over time. Modeling ensures the analysis accounts for detailed planning requirements such as RIP/TOA and the impacts of surge demands associated with major operations. For the purposes of the following analysis, all results used the following assumptions:

Early Warning: 30 Days prior to MCO

Mobilization (Attack Aviation) Time<sup>11</sup>: 4 months

Mobilization (Lift Aviation) Time: 3 months

The modeling allows examination of the performance of each of the design options during a 12-year period consisting of demands ranging from major combat operations to foundational activities. Table 5 provides the expected performance interval<sup>12</sup> (expressed as percentages) of each of the options. This is to say, that if these force design options faced the given 12-year demand signal a hundred times, then the average expected performance across those one hundred potential futures would fit within the ranges shown 95% of the time.

<sup>11</sup> Range of mobilization times are drawn from First Army data presented during OSD-CAPE led AC/RC presentation (25 Nov 14) in briefing titled, First Army Attack Reconnaissance Battalion – Decisive Action Training Models.

<sup>12</sup> Expected performance interval created using traditional confidence interval calculations (based on mean and standard deviation, 95% level) with the recognition that by its nature, Force Generation starting conditions would never be random nor independent. However, based on an understanding of force generation within the Army, the study team can reasonably assume that the approach used to generate multiple start conditions provides a set of start conditions that are representative of potential starting conditions (for a given design option) and plausible within ARFORGEN business rules.

**Table 5. Performance Comparison (30 day warning, attack MOB (4 mo), lift MOB (3 mo)).**

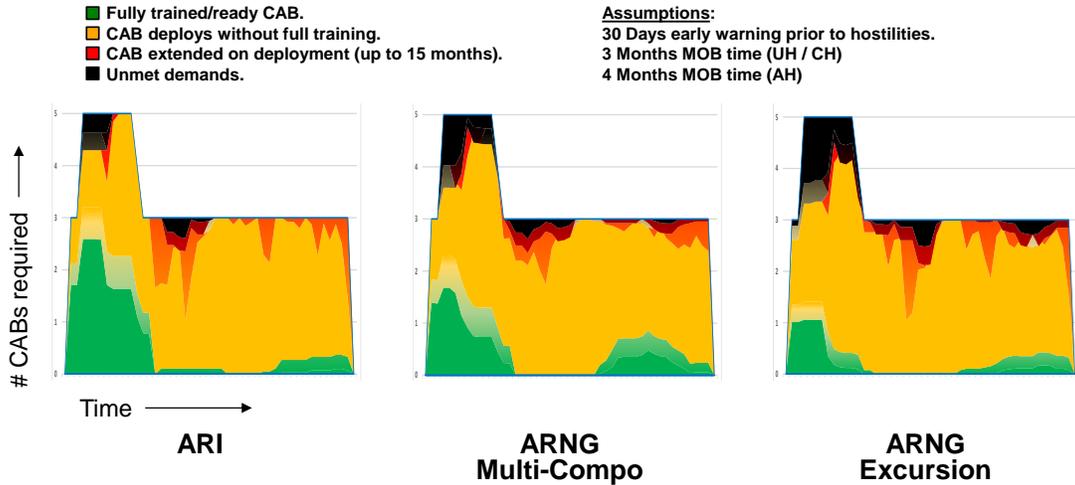
		MCO	DETER	EPP	FA	ALL
<b>ARI</b>	Preferred Unit	96.4-97.2	100-100	100-100	92.2-93.1	93.6-94.2
	Substitution	0-0	0-0	0-0	1.8-2.6	1.3-1.9
	Missed Demand	2.8-3.6	0-0	0-0	4.8-5.4	4.2-4.6
<b>ARNG MC 3-1</b>	Preferred Unit	92.5-94.1	98.5-100	100-100	87.7-88.9	89.5-90.3
	Substitution	0-0	0-1.5	0-0	3.6-4.6	2.6-3.4
	Missed Demand	5.9-7.5	0-0	0-0	7.3-8.0	6.9-7.3
<b>ARNG Excursion</b>	Preferred Unit	88.5-90.3	97.7-100	100-100	86.0-87.3	87.4-88.3
	Substitution	0-0	0-0	0-0	2.2-3.2	1.6-2.3
	Missed Demand	9.7-11.5	0-2.3	0-0	10.2-11.1	10.0-10.4

A review based off of these results shows that one can conclude that the ARI option outperforms (or ties) the ARNG options in all cases as the ARI option dominates (or ties) across all mission areas and there is no overlap in the expected performance interval. Note that these trends are consistent with those expected based on the basic mathematical calculations shown previously.

While this expected performance interval analysis is useful in understanding the relative performance of the COAs, it does not necessarily inform the follow-on analytical question regarding operational risk. To understand the risk, the analysis requires an understanding of the timing, scope and scale of the missed demands. For the purposes of this risk analysis, the study focused subsequent analytical inquiries on examining timing of the missed demands associated with the MCO.

*What is the timing (within the MCO) of the missed demands?* To execute this analysis, the study team conducted a detailed examination of the modeling results associated with the 60 modeling runs generated for each option. The study team decomposed these runs to the monthly level for the duration of the MCO to better understand the performance of each option in meeting the demands. For each month of the MCO period, the study team calculated the expected performance interval for each option as either: 1) Meeting the demand with a fully trained unit; 2) Meeting the demand with a surged unit who deploys without full training; 3) Meeting the demand with a unit who is forced to extend beyond a 12 month deployment; or 4) Failing to meet the demand.

Based on these expected performance interval calculations for each month of the MCO, the study team generated a visual representation of the modeling results. This visual representation is useful in developing an operational understanding of the modeling outcomes. Figure 3 shows this visual depiction for each of the three cases.



**Figure 3. Depiction of expected performance against MCO demands.**

The graphics generated from post-processing of 180 distinct model runs (60 per option) show that the preponderance of the missed demands occur within the peak period of the Phase III of major combat operations. Arguably, this is the period of the highest stress to U.S. forces, as well as the period with the highest tactical, operational, and strategic risk. While all options appear to fail to meet the peak demands during some percentage of the runs, additional analysis is required to understand the scope and scale of the capacity shortfalls.

*What is the scope and scale of capacity shortfalls during the peak demand period? With an understanding of the timing of the missed demands, a further decomposition of the modeling runs provides additional insights into the missed demands and the accompanying risk. Table 6 breaks the 9-month peak demand period into two phases (months 1-5 and months 6-9) and shows the occurrences of capacity shortfalls (for each option) observed across the 60 modeling runs. It is important to note that during the front end of the MCO, the Army is also required to field two FS CABs to deter conflict in a second combatant command AOR (not reflected in the MCO graphic); this peak period is stressful for all design options.*

**Table 6. Capacity Shortfalls Observed Across 60 Modeling Runs for Peak MCO Periods.**

		First 5 Months (After Peak)	Last 4 Months (After Peak)
<b>ARI</b>	Fully Met	34 (56.7%)	60 (100%)
	Missing 1 CAB	20 (33.3%)	0 (0%)
	Missing 2 CABs	6 (10%)	0 (0%)
	Missing 3 CABs	0 (0%)	0 (0%)
<b>ARNG MC 3-1</b>	Fully Met	17 (28.3%)	38 (63.3%)
	Missing 1 CAB	15 (25%)	19 (31.7%)
	Missing 2 CABs	28 (46.7%)	3 (5%)
	Missing 3 CABs	0 (0%)	0 (0%)
<b>ARNG Excursion</b>	Fully Met	7 (11.7%)	25 (41.7%)
	Missing 1 CAB	21 (35%)	25 (41.7%)
	Missing 2 CABs	28 (46.7%)	10 (16.7%)
	Missing 3 CABs	4 (6.7%)	0 (0%)

*What are the implications on ability to field fully trained units?* Figure 3 (previous page) also highlights another difference across the options under consideration. The analysis shows that each alternative demonstrates differing abilities to field fully trained units within the ARFORGEN process. Training shortfalls are especially evident during the initial rotation into the MCO and can be seen as differing levels of green versus orange in Figure 3. Table 7 provides a breakdown of the performance of each option within this peak demand period regarding each option’s respective ability to generate fully trained units per the ARFORGEN model.

**Table 7. Percentage of Deploying Units Fully Trained and Not Fully Trained PH III MCO.**

		4/3/30
<b>ARI</b>	Fully Trained	44.3-59.1
	Surged	40.9-55.7
<b>ARNG MC 3-1</b>	Fully Trained	27.3-43.1
	Surged	56.9-72.7
<b>ARNG Excursion</b>	Fully Trained	15.5-27.9
	Surged	72.1-84.5

*What are the operational risks associated with adoption of the ARNG design option versus the ARI design option?* The analysis shows that greatest distinction between ARI and the ARNG options occurs during the peak demand period. This period is characterized by the highest intensity (and highest risk) combat operations. During this period, the ARI option outperforms the ARNG options. In fact, in approximately 57% of the cases, the ARI option meets all demands for FS CABs. The ARNG option meets approximately half that number (28%) during the first five months. Toward the end of this peak, the ARI meets all demands 100% of the time whereas the best performing ARNG option meets this approximately 63% of the time. Additionally, the ARI option delivers more fully trained CABs into this high intensity environment.

Assuming that critical aircraft shortfalls identified in Table 2 are unacceptable, then the risk associated with adoption of the ARNG proposal increases. The ARNG excursion clearly underperforms in this critical peak period and delivers more untrained units into the fight.

**Conclusions.** Within the context of major combat operations, the Army’s FS CABs exist to support combined arms maneuver. Considering the notional war plan examined in this analysis, the commander on the ground requires five FS CABs to successfully execute the fight. Adoption of either of the ARNG options (versus ARI) reduces the likelihood that the commander will possess the necessary full spectrum aviation capabilities required. This will introduce risk at the operational and tactical level. The operational commander will be forced to accept the risk and make adjustments to his concept of operations; this will likely increase the time to complete the mission and/or increase the likelihood of mission failure.

## Annex A - Aircraft Mapping

The OSD-CAPE led AC/RC Tiger team provided an aircraft mapping of both the ARI option and the ARNG proposal (see Table 2, Page 4 of this report). This mapping highlights some clear differences between the two proposals. The ARNG excursion used in this report was included based on some of the key distinguishing differences (e.g., equipment set on the Korean Peninsula and the aircraft required for the Boeing remanufacturing line).

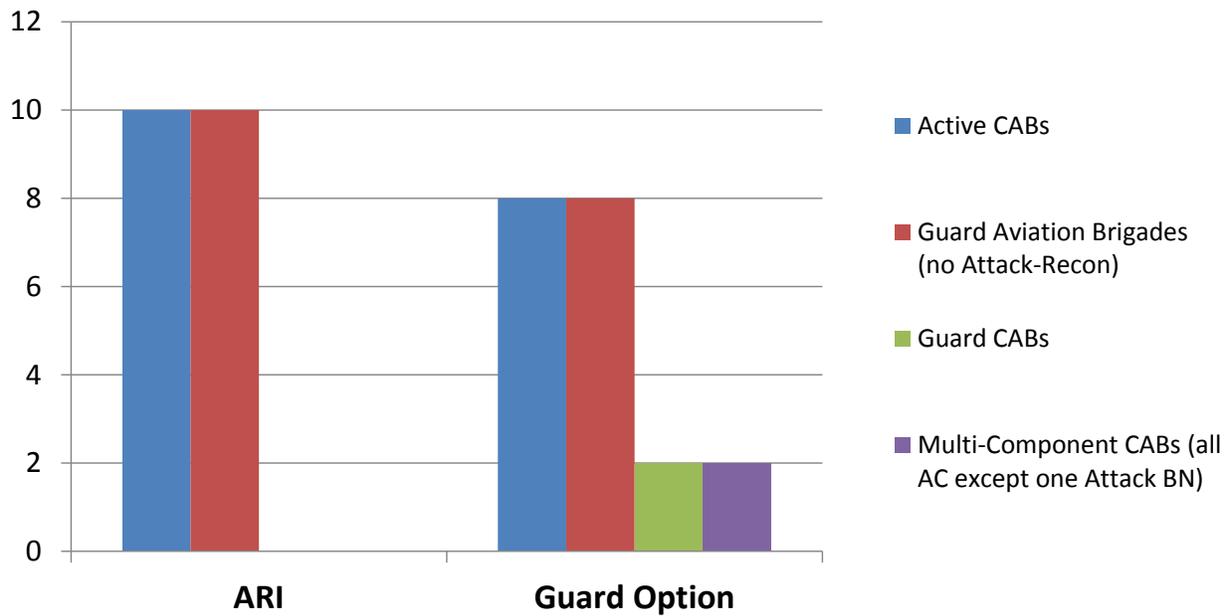
Table A1 provides a potential mapping of aircraft to achieve Excursion 2 and cover the aircraft shortfalls described above.

**Table A1. Potential Aircraft Mapping Solution to Considered COAs.**

	ARI	ARNG Option (3 to 1 MC)	Excursion 2 (Equip Set Restored)
AC + RC BNs	20+0+0=20	18+2+0=24	16+0+6=22
AC BNs Apaches (24 a/c per)	480	432	384
RC BNs (24 a/c per)	0	48	0
RC BNs (18 a/c per)	0	72	108
Equipment Set (2 AC BN)	48	0	48
Training Aircraft	80	80	80
Test Aircraft	15	12	15
Readiness Float	67	57	67
Depot (CCAD)	6	6	6
Boeing Mesa Reman	54	48	54
Average Attrition / year	3	3	3
Other ORF	4	0	4
<b>Total Apaches Req'd</b>	<b>690</b>	<b>701</b>	<b>702</b>
AC CABs	10	8	8
AC Multi-Compo	0	2	0
ARNG CABs	0	0	2
ARNG MC ARBs	0	6	0
CSABs	10	8	8
Equipment Sets	1	0	1
		3 to 1 RC ARB alignment with 2 MC CABs	Must Fund Equipment Set, No Multi-Compo, Restore Reman

## Annex B – Comparative Analysis of Original ARNG COA

The main body of this white paper provides a comparative analysis of the ARI option and two potential ARNG excursions. The ARNG excursions were developed based on insights from the OSD-Led AC/RC Tiger Team for Aviation restructuring. Based on conclusions reported by the AC/RC Tiger Team (e.g., requirement for a 3:1 ratio of ARBs to multi-compo FS CABs), the original ARNG proposal (shown in Figure B1) was not included in the comparative analysis.



**Figure B1. National Guard Alternative to ARI.**

Annex B provides a comparative analysis of this original option. This analysis assumes that the Army could successfully field the original ARNG option (referred to in this Annex as “ARNG MC 1-1”) and provides a comparative analysis consistent with the analysis included in the main body. Following this comparative analysis, this Annex also provides a brief accounting of issues / risks associated with acceptance of this original option.

This analysis assumes a 30 day early warning prior to commencement of hostilities, a 3 month mobilization for CSABs and a 4 month mobilization for ARNG CABs and ARBs.

*What were the modeling results?* While they vary slightly based on differences in assumptions of early warning and mobilization times, the modeling results are very consistent with those shown in October.

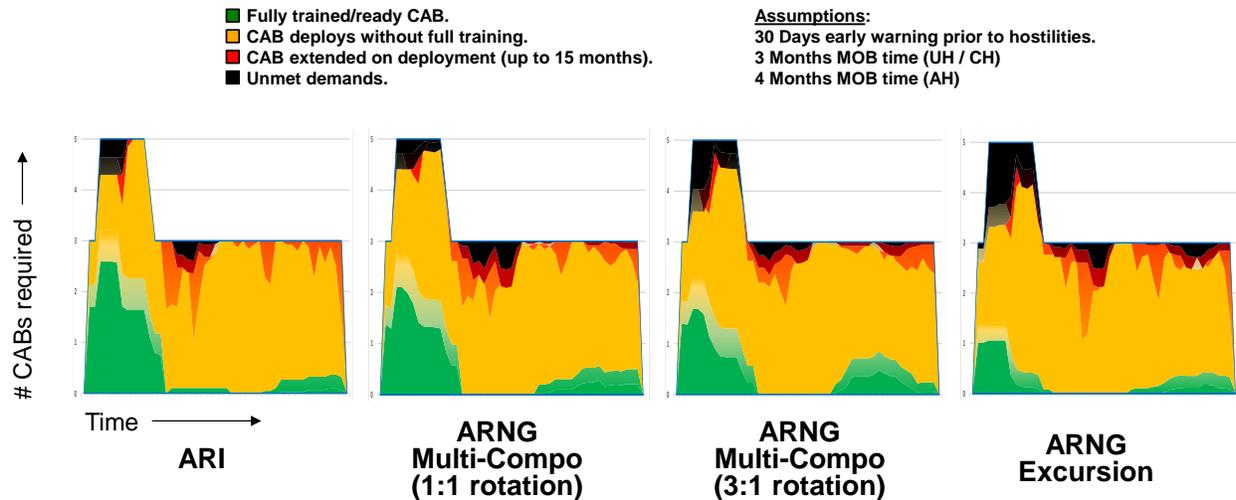
**Table B1. Performance Comparison (30 day warn, ATK MOB (4 mo), Lift MOB (3 mo)).**

		MCO	DETER	EPP	FA	ALL
<b>ARI</b>	Preferred Unit	96.4-97.2	100-100	100-100	92.2-93.1	93.6-94.2
	Substitution	0-0	0-0	0-0	1.8-2.6	1.3-1.9
	Missed Demand	2.8-3.6	0-0	0-0	4.8-5.4	4.2-4.6
<b>ARNG MC 1-1</b>	Preferred Unit	93.9-95.5	90.0-97.2	100-100	88.9-90.1	90.6-91.4
	Substitution	0-0	2.8-10.0	0-0	5.2-6.2	3.9-4.7
	Missed Demand	4.5-6.1	0-0	0-0	4.5-5.2	4.5-4.9
<b>ARNG MC 3-1</b>	Preferred Unit	92.5-94.1	98.5-100	100-100	87.7-88.9	89.5-90.3
	Substitution	0-0	0-1.5	0-0	3.6-4.6	2.6-3.4
	Missed Demand	5.9-7.5	0-0	0-0	7.3-8.0	6.9-7.3
<b>ARNG Excursion</b>	Preferred Unit	88.5-90.3	97.7-100	100-100	86.0-87.3	87.4-88.3
	Substitution	0-0	0-0	0-0	2.2-3.2	1.6-2.3
	Missed Demand	9.7-11.5	0-2.3	0-0	10.2-11.1	10.0-10.4

Review of these results shows that the ARI option out-performs or ties the ARNG MC 1-1 option in all areas measured. In the early October comparison, the ARNG MC 1-1 option outperformed the ARI option in “Missed Demands in FA.” That October assessment was based on more favorable assumptions (90 day early warning and 3 months mobilization for all ARNG units). The less favorable assumptions used in this analysis result in an overlapping of the expected performance intervals, which indicates a mathematical tie in this performance area.

As with the earlier analysis, expected performance interval analysis is useful in understanding the relative performance of the COAs, but it does not necessarily inform the analytical question regarding operational risk. To understand the risk, the analysis requires an understanding of the timing, scope and scale of the missed demands. For the purposes of this risk analysis, the study again focused analytical inquiries on examining timing of the missed demands associated with the MCO.

*What is the timing (within the MCO) of the missed demands?* To answer this question, the study team generated a visual representation of the modeling results. This visual representation is useful in developing an operational understanding of the modeling outcomes. Figure B2 shows this visual depiction for each of the four cases.



**Figure B2. Depiction of expected performance against MCO demands.**

As with the baseline analysis, the graphics generated from post-processing of 240 distinct model runs (60 per option) show that the preponderance of the missed demands occur within the peak period of the Phase III of major combat operations. This is the period of the highest stress to U.S. forces, as well as the period with the highest tactical, operational, and strategic risk. It is clear from the graphic that the ARNG MC 1-1 option out-performs the other ARNG options (as would be expected) in the peak period, but appears to under-perform all other options during the transition period following the peak demands. Post-processing of the modeling results will provide a greater understanding of the scope and scale of the capacity shortfalls.

*What is the scope and scale of capacity shortfalls during the peak demand period? With an understanding of the timing of the missed demands, a further decomposition of the modeling runs provides additional insights into the missed demands and the accompanying risk. The following two tables provide insights into both periods of interest (peak demand and transition period). Table B2 breaks the 9-month peak demand period into two phases (months 1-5 and months 6-9) and shows the occurrences of capacity shortfalls (for each option) observed across the 60 modeling runs. It is important to note that during the front end of the MCO, the Army is also required to field two FS CABs to deter conflict in a second combatant command AOR (not reflected in the MCO graphic); this peak period is stressful for all design options.*

**Table B2. Capacity Shortfalls Observed Across 60 Modeling Runs for Peak MCO Periods.**

		First 5 Months (After Peak)	Last 4 Months (After Peak)
<b>ARI</b>	Fully Met	34 (56.7%)	60 (100%)
	Missing 1 CAB	20 (33.3%)	0 (0%)
	Missing 2 CABs	6 (10%)	0 (0%)
	Missing 3 CABs	0 (0%)	0 (0%)
<b>ARNG MC 1-1</b>	Fully Met	38 (63.3%)	50 (83.3%)
	Missing 1 CAB	18 (30%)	10 (16.7%)
	Missing 2 CABs	4 (6.7%)	0 (0%)
	Missing 3 CABs	0 (0%)	0 (0%)
<b>ARNG MC 3-1</b>	Fully Met	17 (28.3%)	38 (63.3%)
	Missing 1 CAB	15 (25%)	19 (31.7%)
	Missing 2 CABs	28 (46.7%)	3 (5%)
	Missing 3 CABs	0 (0%)	0 (0%)
<b>ARNG Excursion</b>	Fully Met	7 (11.7%)	25 (41.7%)
	Missing 1 CAB	21 (35%)	25 (41.7%)
	Missing 2 CABs	28 (46.7%)	10 (16.7%)
	Missing 3 CABs	4 (6.7%)	0 (0%)

In the initial 5 months, from a raw counting perspective, the ARNG MC 1-1 option slightly outperforms ARI (~6.5%). However, that out-performance over ARI is short-lived. The ARI option outperforms the ARNG MC 1-1 option over the following 4 months (~17%). Both ARI and the ARNG MC 1-1 out-perform the other ARNG options, although for the ARNG MC 1-1 option, this out-performance over the other ARNG options is short-lived. Table B3 shows a comparison of performance during the transition period.

**Table B3. Capacity Shortfalls Observed Across 60 Runs for MCO Transition Period.**

		First 15 Months (PH IV Demands)
<b>ARI</b>	Fully Met	25 (41.7%)
	Missing 1 CAB	33 (55%)
	Missing 2 CABs	2 (3.3%)
	Missing 3 CABs	0 (0%)
<b>ARNG MC 1-1</b>	Fully Met	11 (18.3%)
	Missing 1 CAB	37 (61.7%)
	Missing 2 CABs	11 (18.3%)
	Missing 3 CABs	1 (1.7%)
<b>ARNG MC 3-1</b>	Fully Met	31 (35%)
	Missing 1 CAB	37 (61.7%)
	Missing 2 CABs	2 (3.3%)
	Missing 3 CABs	0 (0%)
<b>ARNG Excursion</b>	Fully Met	16 (26.7%)
	Missing 1 CAB	34 (56.7%)
	Missing 2 CABs	10 (16.7%)
	Missing 3 CABs	0 (0%)

Table B3 shows that all options out-perform the ARNG MC 1-1 option during this critical transition period. When compared to the ARNG MC 1-1 option, the ARI option is ~2.3 times more likely to fully meet demands during the transition period. The ARNG MC 1-1 option experienced periods of 2 or more CAB shortfalls in 20% of the model runs (vs 3.3% for ARI).

*What are the operational risks associated with adoption of the ARNG design option versus the ARI Design option?* Assuming that other risks and shortfalls associated with the ARNG MC 1-1 option are either mitigated, accepted, or disregarded (see next section), the ARNG MC 1-1 option does demonstrate an ability to meet peak surge demands for a short period of time. While the ARNG design option provides similar capacity to the ARI option in the initial months of a surge event, that performance is short-lived. Modeling demonstrates that the ARNG MC 1-1 option lacks the endurance to match the ARI's production capacity over time.

*What are other risks associated with the ARNG MC 1-1 option?* The following provides a brief discussion on risks associated with key assumptions required to accept execution of this option.

1:1 Alignment of ARBs to FS CABs (MC). With the 1:1 alignment of ARNG ARBs against AC FS CABs (MC), there is a relatively high occurrence of AC FS CABs (MC) deployed to either foundational activities or the deterrence mission without their round-out ARB. This introduces risk as the requirements demand 2 ARBs per FS CAB, but due to a lack of round-out units, the FS CABs deploy to potentially dangerous conditions with only half of their attack assets. Based on a conservative interpretation of modeling results, AC FS CABs (MC) deploy without their round-out ARB in approximately 75% of their deployments.

Aircraft Shortfalls in the ARNG FS CABs. The ARNG MC 1-1 option fields two ARNG FS CABs. These CABs require a total of 96 AH-64 aircraft (48 per CAB). The ARNG option only allocates 72 AH-64 aircraft (36 per CAB) against these formations. The ARNG position is that units remaining in CONUS will cross-level aircraft to the deploying units to ensure they are fully equipped. At steady state, the ARBs are equipped at only 75% of their required AH-64 equipping levels. Once a CAB deploys, the remaining ARBs are equipped at 50%. The ARBs remaining at CONUS are still required to train and progress through the ARFORGEN process. This aircraft shortfall will exacerbate existing ARNG training challenges.

Korean Peninsula Equipment Set (Rotational Units). The ARI option resources 48 AH-64s as an equipment set on the Korean Peninsula. During peacetime, every 9 months, units will rotate into theater and use the equipment set that is pre-positioned. The ARNG option does not resource this equipment set. Adoption of the ARNG option requires rotating units to prepare and ship their respective aircraft sets every 9 months. This will result in a combination of second destination transportation costs, lost training time, and wear / tear on unit aircraft. Another alternative would be to permanently forward station a FS CAB on the peninsula. This would require identification of a CONUS-based unit and installation for loss of a CAB.

Korean Peninsula Equipment Set (Regeneration). The existence of the FS CAB equipment set in Korea significantly simplifies potential future regeneration of Aviation capabilities. Eliminating the need to procure and transport all aircraft and associated support equipment would reduce the time required to generate a new CAB by more than two years.

Boeing Mesa Remanufacture Line. The ARNG MC 1-1 option underfunds the remanufacture line by 6 aircraft. This underfunding could result in a “rolling shortfall” of 6 aircraft to maintain planned remanufacture production levels. These 6 aircraft must come from somewhere and the likely bill-payer would be operational units. For AC units, this represents a loss of 12.5% of their aircraft. For the ARNG FS CABs, this additional shortfall would decrease a CAB’s equipping levels from 75% to 62.5%. These shortfalls were not modeled in this analysis.

Aircraft Procurement Bill. The ARNG MC 1-1 option requires 701 aircraft. This represents a shortfall of 11 aircraft when compared to the ARI option (701 versus 690). If this shortfall is procured, it represents an approximate ~\$500M bill for the Army. It is important to note, that even with this purchase, none of the shortfalls highlighted above would be addressed.



**TAB E - GAO Force Structure:  
Army's Analyses of Aviation Alternatives**





U.S. GOVERNMENT ACCOUNTABILITY OFFICE

441 G St. N.W.  
Washington, DC 20548

April 27, 2015

Congressional Committees

### **Force Structure: Army's Analyses of Aviation Alternatives**

In anticipation of budget and military end-strength reductions, the Army is undertaking an extensive effort to reduce the size of its force and rebalance its combat aviation capabilities. In October 2013, the Army Chief of Staff approved a force-structure proposal—called the Army Aviation Restructuring Initiative—that would cut approximately 10,700 military positions from the Army's end strength by eliminating active-component and reserve-component units from the Army's force structure.<sup>1</sup> The proposal would enable the Army to divest nearly 800 older and less-capable helicopters from the force, and rebalance combat capabilities across the regular Army, Army National Guard, and Army Reserve. The Army would accomplish this by removing all AH-64 Apache helicopters from the reserve component and increasing the number of AH-64 Apaches in the active component. According to the Army, once implemented the aviation restructuring initiative would save roughly \$1 billion annually.<sup>2</sup>

The National Guard Bureau (Bureau), although agreeing with many aspects of the Army's proposal, has opposed the effort to remove the AH-64 Apache helicopters from the Army National Guard. Bureau officials said that in their view the removal of these helicopters will degrade the Army National Guard's role as a combat reserve; establish a precedent for removing other combat capabilities from the Army National Guard; and disrupt Army National Guard units and force structure across 20 states. In January 2014, the Bureau put forward an alternate force-structure proposal that, if implemented, would retain some AH-64 helicopters in the Army National Guard.

Since the Bureau's January 2014 counterproposal, both the Army and the Office of the Secretary of Defense have assessed and compared the Army's proposal and the Bureau's alternative in terms of each proposal's ability to meet anticipated operational demands, and its estimated costs. Bureau officials said that the Bureau does not have the expertise required to assess the performance and costs of its force-structure proposal; however, the Bureau provided input into both analyses. Based on these analyses, the Army stated that implementing the

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<sup>1</sup>Positions are requirements for personnel that are documented on the Army's manpower requirements document. These requirements may not be filled by the Army when making resourcing decisions and as a result do not represent actual manpower assigned to Army units.

<sup>2</sup>In December 2014, Congress limited the Army's proposal, by authorizing the Secretary of the Army to transfer not more than 48 AH-64 Apache helicopters from the Army National Guard to the regular Army between October 1, 2015, and March 31, 2016, if the Secretary of Defense certifies in writing to the defense committees that the transfer would not create unacceptable risk to: the strategic depth or regeneration capacities of the Army; and the Army National Guard in its role as a combat reserve. See Pub. L. No. 113-291, § 1712(e) and (f) (2014).

Bureau's force-structure proposal would result in unacceptable operational risk and has sought to move forward with its own restructuring initiative.

The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 included a provision for GAO to compare the assumptions, cost estimates, and support-personnel implications underlying the Army's aviation force-structure proposal with those underlying the Bureau's alternate proposal.<sup>3</sup> This report (1) compares the assumptions underlying the Army's and the Bureau's respective combat aviation force-structure proposals; (2) evaluates the Army's analyses of the two proposals' respective capacities to meet projected combat requirements; and (3) evaluates the Army's cost analyses and comparison of both proposals. We also identified how the Army's and the Bureau's proposed force structures would affect personnel-support requirements for the Army's combat aviation brigades. We provided a briefing on our preliminary observations to congressional defense committees' staff on February 26, 2015. This report formally transmits the results of our work in response to this mandate (see encl. I).

To compare the assumptions underlying the two force-structure proposals, we identified assumptions by reviewing Department of Defense (DOD), Department of the Army, and Bureau guidance; assessed documentation underlying the force-structure proposals including force-structure documentation, briefing slides, and the Army's demand analysis; and compared the assumptions identified for each force-structure proposal. To evaluate the Army's assessment of the two proposals' abilities to meet future combat demands, we compared the Army's methodology for performing its analysis to generally accepted research standards for study design,<sup>4</sup> and reviewed technical documentation associated with the Army's model including its user manual and the model's verification, validation, and accreditation documentation. Specifically, we used the standards we developed in our prior work that were related to the study design, because our review focused on the assumptions, constraints, and scenarios that the Army used in its analysis. These specific standards require that assumptions and constraints be reasonable, explicitly identified, and consistent, and that scenarios represent a reasonably complete range of conditions. To evaluate the Army's cost analyses and comparison of both proposals, we compared the Army's cost-estimating models and methodology for preparing these analyses to leading practices.<sup>5</sup> We further evaluated the Army's use of these estimates against standards for internal control in the federal government,<sup>6</sup> specifically those standards related to information and communications. Because the Army Chief of Staff approved the aviation restructuring initiative, we also evaluated the Army's estimated costs for implementing its proposal, and its anticipated annual costs, against these criteria. To identify how the Army's and the Bureau's proposed force structures would affect personnel-support

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<sup>3</sup>See Pub. L. No. 113-291, § 1057 (2014). Additionally, S. Rep. No. 113-176, at 83 (2014), included a provision for GAO to more broadly review the Army's force-structure decision-making processes, models, and analyses.

<sup>4</sup>GAO, *Defense Transportation: Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report*, [GAO-06-938](#) (Washington, D.C.: Sept. 20, 2006). In that report, we reviewed research literature and DOD guidance and identified frequently occurring, generally accepted research standards. See [GAO-06-938](#) for more information.

<sup>5</sup>GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: March 2009). The Cost Estimating and Assessment Guide compiles best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of an acquisition program. See [GAO-09-3SP](#) for more information.

<sup>6</sup>See GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

requirements for the Army's combat aviation brigades, we created a data set from the Army's fiscal year 2014 and fiscal year 2020 personnel requirements documents and incorporated composite personnel cost data.<sup>7</sup> We then obtained agreement from the Headquarters, Department of the Army; U.S. Army Reserve; and Army National Guard on the definition for "support," and applied that definition when we calculated and compared the number and associated costs of corresponding positions.<sup>8</sup> We assessed the reliability of the Army's cost and personnel requirements data and cost-estimating models by reviewing documentation associated with the relevant data systems. Specifically, for both types of data, we reviewed Army internal controls, interviewed key officials, and traced certain data elements back to source documentation. We determined the data were reliable for the purposes of our review. For each objective, we interviewed knowledgeable officials to discuss methodologies, to identify relevant factors, and to obtain their perspectives. We met with officials from the Office of the Secretary of Defense; Headquarters, Department of the Army; and the Bureau to obtain oral comments on our preliminary briefing materials, and we incorporated technical comments as appropriate.

We conducted this performance audit from July 2014 to April 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Summary

The Army and the Bureau agree on those specific assumptions in their force-structure proposals pertaining to military strategy, near-term training resources, the demand for forces, and Army National Guard unit readiness, but disagree on other planning assumptions, such as the Army's budget constraints and how Army National Guard units would be trained, mobilized, and used in combat. For example, both the Army and the Bureau agreed that, prior to deployment for any given mission, Army National Guard soldiers will meet the same training and readiness standards as regular Army soldiers with the same mission. However, the Army and the Bureau disagreed on other assumptions affecting decisions about how to restructure the aviation force. Notably, Army officials said that they anticipate that the Army will continue to face budget pressures and as a result are looking to develop an efficient force structure that maximizes the Army's combat aviation capabilities, whereas Bureau officials told us the Army should not base long-term and irreversible force-structure decisions on short-term funding challenges.

The Army's analyses of the proposals' abilities to meet projected demand for forces is based on a reasonable methodology and is suitable for comparing one proposal against the other, but

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<sup>7</sup>We used data from these years because the Army did not begin implementing its proposed restructuring until the end of fiscal year 2014, and fiscal year 2020 is the year by which it is to be completed.

<sup>8</sup>"Support" personnel directly or indirectly sustain combat aviation units excluding flight crews and pilots. To arrive at this definition, we met with Army and Army National Guard officials and generated a list of combat aviation jobs that the officials agreed either directly or indirectly sustain combat aviation units. Using this list, we then filtered required combat aviation positions depicted in Army, Army National Guard, and U.S. Army Reserve documents to determine the military and Full-Time Support personnel-support positions necessary for the 2014 combat aviation structure, and the combat aviation structures under the Army's proposal and the Bureau's proposal in 2020. To determine the costs associated with the 2014 combat aviation structure and proposed fiscal year 2020 combat aviation structures, we used composite rates for active and reserve military positions, respectively, and the rate per Active Guard/Reserve and Military Technician as reported by the Army National Guard.

additional sensitivity analysis could have been beneficial to decision makers. Generally accepted research standards for study design state that credible and well-designed studies identify their assumptions and constraints clearly; consistently apply necessary and reasonable assumptions; and include sensitivity analyses to assess results across a variety of scenarios, among other things.<sup>9</sup> We found that the Army's analysis met several of these design standards, in that the Army used the same assumptions throughout its analysis and based its assumptions for the mobilization and deployment of units on DOD and Army policies. For example, under the assumption that Army National Guard units would be able to complete postmobilization training within 3 months' time, the Army found that both proposals were able to meet more than 90 percent of the anticipated combat demands under DOD's classified planning scenario.<sup>10</sup> In January 2015, the Army completed a sensitivity analysis that used different assumptions than in the Bureau's proposal; specifically, the Army lengthened the postmobilization training time for Army National Guard units to 4 months, to better reflect the time that Army National Guard units historically have used prior to deployment. Under the revised assumptions, the Army found that both its and the Bureau's force-structure proposal experienced shortfalls during the peak period of major combat operations, but the Army's proposal met all demands during final four months of the peak demand period while the Bureau's proposal met 83 percent of the demands.

Although we found this approach suitable for comparing the two proposals with each other under the given scenario, the Army's analysis did not evaluate how the proposals would have performed under modified scenarios that varied the rate at which units would deploy into a major combat operation, or the duration of the major combat operation. This analysis could have provided senior Army leaders with insights on how adaptable the competing proposals would be when confronted with different combat requirements and helped inform their decision making. Bureau officials said that DOD's classified planning scenario assumes the need to deploy a large number of units in a short period and that this assumption favors the active Army. However, Army officials stated that they did not modify the scenario to change deployment rates or durations because they are required to use DOD's approved planning scenario for sizing and shaping the Army's forces. These officials said that by using DOD's planning scenario they were able to assess the proposals against a range of conditions; complete a fair and objective analysis that enabled them to effectively differentiate between the force-structure proposals; and ensure that their analysis would be seen as credible by DOD officials and other stakeholders relying on their analysis. DOD officials confirmed that the Army followed DOD accepted practices for sensitivity analysis within force-structure planning processes.

The Army's cost analyses generally met some leading practices for cost estimating and, as a result, were sufficiently reliable for comparing the costs of its and the Bureau's force-structure proposals; however, the estimates were of limited value for projecting the actual implementation or annual costs of the Army's proposal.<sup>11</sup> Federal standards for internal control identify the need

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<sup>9</sup>GAO-06-938.

<sup>10</sup>DOD's Integrated Security Construct-B comprises four mission types (in order of priority): (1) *Defeat / Major Combat Operations*: To defeat a regional adversary in a large-scale multiphased campaign; (2) *Deter*: To prevent acts of aggression in one or more theaters by presenting a potential adversary with a credible threat of unacceptable counteraction by U.S. forces, and/or belief that the cost of the potential adversary's action outweighs the perceived benefits; (3) *Defend / Homeland Defense*: To defend U.S. territory from direct attack by state and nonstate actors and, in the event such defense fails or in the case of natural disasters, come to the assistance of domestic civil authorities in response to a very significant or even catastrophic event; and (4) *Steady State / Foundational Activities*: Activities the Joint Force conducts by rotating forces globally to build security globally, preserve regional stability, deter adversaries, and support allies and partners.

<sup>11</sup>GAO-09-3SP.

for agency decision makers to have relevant, reliable, and timely information that enables them to carry out their responsibilities.<sup>12</sup> The Army compared the annual projected operating costs for its proposal and the Bureau's alternative and found that the proposals would cost \$6.75 billion and \$6.80 billion annually, respectively. Based on Army acquisition data, DOD estimated the onetime implementation costs of the two proposals, and found that the Bureau's proposal was \$220 million to \$420 million more expensive than the Army's proposal, because the Bureau proposed acquiring 11 additional AH-64 Apache helicopters.<sup>13</sup> However, the Army subsequently stated that, based on its analysis, the Bureau's proposal would create unacceptable risk to the force, which could be offset by acquiring 115 additional AH-64 Apache helicopters (104 more than in the Bureau's proposal) and associated equipment, for a total onetime cost of \$5.52 billion, and an additional \$338 million per year to sustain unplanned force structure.<sup>14</sup> We found that the Army's estimates were substantially comprehensive and well documented, and based on historic funding and manning levels. We also found that the Army consistently applied assumptions to each proposal, and that it used agreed-upon programmatic cost estimates for acquiring the most-modern version of the Apache helicopter. However, we found the estimates were limited as a means to project actual costs and cost savings. For example, the Army's annual cost estimates did not reflect uncertainties about personnel, operations, or readiness of individual units, and the implementation cost estimates excluded some operational costs at the battalion and command level. For example, in the U.S. Army Reserve, where one attack reconnaissance battalion has already begun converting to fly UH-60 Blackhawks, officials told us the process of converting a unit will increase pay and allowances, and require unique equipment fielding, aircraft maintenance, training, and other supply costs at the battalion and command level. Army officials told us that their approach to estimating costs was intended to permit a comparison of the two proposals, and not to develop future budgets.

Although both the Army's and the Bureau's proposals require fewer support positions and cost less than the aviation force structure approved by the Army in fiscal year 2013, the Bureau's proposal requires more positions and costs more than the Army's proposal. The Army's proposal requires 1,249 fewer full-time positions in the Reserve component (1,081 fewer Military Technicians and 168 fewer Active Guard/Reserve personnel);<sup>15</sup> 1,108 fewer part-time positions (traditional reservists or guardsmen); and 382 more regular Army personnel than the Bureau's proposal. Additionally, we found that each type of unit requires a different number of full-time or part-time positions to maintain readiness or to become operational. According to the Army's and Bureau's proposals, the number of positions required for each type of unit are the same for regular Army units; however, the number of full-time and part-time positions vary depending on the type of combat aviation brigade to which the unit is assigned. Additional information is included in appendix II of the briefing.

We are not making recommendations in this report.

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<sup>12</sup>[GAO/AIMD-00-21.3.1](#).

<sup>13</sup>The Bureau's proposal also required \$150 million in implementation costs to acquire additional Shadow unmanned aircraft.

<sup>14</sup>These costs were not included in the Army's original cost estimate for the Bureau's proposal, and we did not validate the reliability of the annual recurring cost.

<sup>15</sup>Military technicians are civilian employees and Active Guard and Reserve are military personnel who provide services and administrative support to part-time drilling reservists, among other things.

## Agency Comments and Our Evaluation

We provided a draft of this report to DOD for comment. In written comments provided by the Headquarters, Department of the Army, DOD generally agreed with our findings. These comments are reproduced in enclosure II. The Office of the Secretary of Defense and the National Guard Bureau also provided technical comments, which we incorporated as appropriate.

As we noted in our report, the Army's analyses were reasonable and suitable for comparing the two force-structure proposals. Specifically, the Army's approach to analyzing the proposals' abilities to meet the projected demand for forces followed generally accepted standards, but additional sensitivity analysis could have been beneficial to decision makers. In its comments, DOD stated that it agreed with our assessment that the Army's analyses of the proposals' abilities to meet projected demand for forces were based on a reasonable methodology but it did not directly address whether further analyses would have been beneficial to decision makers. However, the Army reemphasized its conclusion that the analyses demonstrated that the Army's proposal is better able to meet the projected demand for combat aviation under DOD's classified warfighting scenarios.

Additionally, we found that the Army's cost analyses of the two proposals were sufficiently reliable for comparing the costs of the force-structure proposals but were of limited value for projecting or programming the annual or implementation costs of the Army's proposal. DOD concurred with our assessments of the cost analyses while emphasizing that the Army's proposal provides an affordable and acceptable solution to meet current and future aviation requirements.

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We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense; the Director, Cost Analysis and Program Evaluation; the Secretary of the Army; the Chief of Staff of the Army; and the Chief of the National Guard Bureau. The report is also available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-3489 or [PendletonJ@gao.gov](mailto:PendletonJ@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report include Kevin O'Neill, Assistant Director; Tracy Barnes; Erin Butkowski; Martin De Alteriis; Abishek Krupanand; Grant Mallie; Ricardo Marquez; Karen Richey; Amie Steele; Cheryl Weissman; and Alex Winograd.



John H. Pendleton  
Director, Defense Capabilities and Management

Enclosures-2

*List of Committees*

The Honorable John McCain  
Chairman  
The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Thad Cochran  
Chairman  
The Honorable Richard J. Durbin  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate

The Honorable Mac Thornberry  
Chairman  
The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable Rodney Frelinghuysen  
Chairman  
The Honorable Pete Visclosky  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
House of Representative



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# **Force Structure: Army's Analyses of Aviation Alternatives**

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**Briefing for Congressional Defense Committees  
February 26, 2015 (Updated April 27, 2015)**

## Contents

- Introduction
- Objectives
- Scope and Methodology
- Summary
- Objective 1: Assumptions Regarding Strategy, Resources, and Component Roles
- Objective 2: Proposals' Capacities to Meet Potential Demand for Forces
- Objective 3: Cost Analyses and Comparative Cost Estimates
- Agency Views
- Appendixes

## Introduction—The Army’s Aviation

- The Army operates seven types of helicopters and two types of unmanned aircraft affiliated with the Army’s combat aviation force structure (see fig. 1).

**Figure 1: Helicopters and Unmanned Aircraft Affiliated with Army Aviation Force Structure**



Source: Defense Video and Imagery Distribution System and the Department of the Army. | GAO-15-430R

## Introduction (cont.)—The Army’s Approved Combat Aviation Force Structure

- In fiscal year 2013, the Army authorized a combat aviation force that would require 71,000 soldiers; 2,945 attack and assault helicopters (810 AH-64 Apache helicopters and 2,135 UH-60 Blackhawk helicopters) at an estimated cost of \$7.9 billion annually—excluding combat operations.
- The Army’s authorized force structure included 21 combat aviation brigades (13 in the active component and 8 in the reserve component), and 2 theater aviation commands (in the Army’s reserve component). These brigades and commands are made up of subordinate units as described in table 1.

**Table 1: Units Subordinate to the Army’s Combat Aviation Brigades and Theater Aviation Commands (Authorized in Fiscal Year 2013)**

<b>Subordinate unit</b>	<b>Description</b>	<b>Helicopters</b>
Assault Battalion	Provides air assault and air movement capability.	30 UH-60 Blackhawk helicopters
Attack Reconnaissance Squadron	Supports early tactical operations and ground maneuver with reconnaissance, security, and attack.	30 OH-58D Kiowa Warrior helicopters
Attack Reconnaissance Battalion	Supports early tactical operations and ground maneuver with reconnaissance, security, and attack.	24 AH-64 Apache helicopters
General Support Aviation Battalion	Participates in all brigade operations including aerial command and control; heavy lift support; and aeromedical evacuation.	8 UH-60 Blackhawk helicopters, 12 CH-47 Chinook helicopters, 15 HH-60 Blackhawk Medevac helicopters
Aviation Support Battalion	Plans, coordinates, and executes the aviation brigade’s sustainment and signal support requirements.	None.
Security and Support Battalion	Supports a variety of federal, state, and homeland security missions.	32 LUH-72 Lakota helicopters

Source: Department of the Army. | GAO-15-430R

## Introduction (cont.)—The Army’s Aviation Force Structure Proposal

- In January 2013, the Army started to analyze its aviation force structure to determine how much aviation capability would be needed in 2020. By August 2013, Army officials said that they developed a force-structure proposal that would enable the Army to retain its most-modern and most-capable helicopters. According to Army officials, the Army Chief of Staff approved the Army’s proposal in October 2013. The Army’s force-structure proposal called for the Army to
  - eliminate nearly 800 aircraft from the Army’s planned force structure by divesting three types of older helicopters (OH-58D Kiowa Warrior, OH-58 A/C Kiowa, and TH-67 Creek); and
  - reduce end strength by about 10,700 military positions (about 6,100 regular Army—soldiers that are in the active component when not deployed—and 4,600 reserve component) resulting in a combat aviation force with about 60,000 regular Army and reserve-component positions.
- This proposal also called for significant changes in the allocation of units and helicopters relative to the force structure authorized in fiscal year 2013. Specifically, it would
  - eliminate three active-component combat aviation brigades and—from the reserve component—one theater aviation command and one OH-58D Kiowa Warrior squadron;
  - remove all AH-64 Apache helicopters from the reserve component and increase by 120 the number of AH-64 helicopters authorized for the active component;
  - convert eight Army National Guard and two Army Reserve attack reconnaissance battalions to four Army National Guard and two Army Reserve assault helicopter battalions;<sup>1</sup> and
  - transfer 159 UH-60 Blackhawk helicopters from the active component to the Army National Guard and Army Reserve.

<sup>1</sup>Four of these conversions were for two Army Reserve and two Army National Guard units and were previously directed by the Chief of Staff of the Army in June 2013.



## Introduction (cont.)—The National Guard Bureau’s Proposal

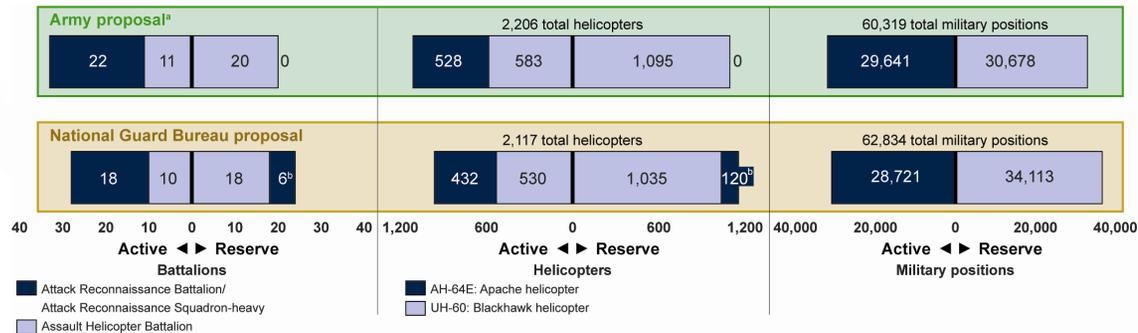
- Although National Guard Bureau (Bureau) officials state that they agree with many changes called for under the Army’s proposal, the Bureau opposes moving the AH-64 Apache helicopters into the regular Army. The Bureau has stated that doing so will
  - result in operational risk because the Army will have fewer total AH-64 Apache battalions;
  - degrade the Army National Guard’s role as a combat reserve and establish precedent for removing other combat capabilities from the Army National Guard; and
  - disrupt Army National Guard units and force structure across 20 states.
- In January 2014, the Bureau put forward an alternate force-structure proposal for the Army’s combat aviation units. The Bureau’s proposal, which has evolved over time, differs from the Army’s in that it
  - reduces end strength by about 8,000 military positions (about 7,000 regular Army and 1,000 reserve component), resulting in a combat aviation force with about 63,000 military positions;
  - retains 120 AH-64 Apache helicopters and six attack reconnaissance battalions in the Army National Guard—two with the full complement of 24 aircraft and four with 18 aircraft;<sup>2</sup> and
  - divests two regular Army attack reconnaissance battalions, 113 UH-60 Blackhawks, and 12 CH-47 Chinook helicopters from the Army’s force structure.<sup>3</sup>
- The differences between the proposals are shown in figure 2 and appendix I.

<sup>2</sup>The Bureau’s proposal calls for two multicomponent (units made up of regular Army and Army National Guard personnel and equipment) full-spectrum combat aviation brigades that include one fully equipped Army National Guard attack reconnaissance battalion each.

<sup>3</sup>Unlike the Army’s proposal, the Bureau’s proposal does not include a full-spectrum combat aviation brigade “equipment set” in South Korea. The Bureau does not specify where the helicopters associated with the equipment set’s support battalions and assault helicopter battalion would be assigned under its proposal. Consequently, we did not include these helicopters as part of the Bureau’s proposal.

## Introduction (cont.)—Differences between the Army’s and the National Guard Bureau’s Proposals

**Figure 2: Differences between the Army’s and National Guard Bureau’s Proposed Fiscal Year 2020 Force Structures by Battalions, Helicopters, and Military Positions—As of February 2015**



Source: GAO analysis of Army data. | GAO-15-430R

<sup>a</sup>The Army’s proposal includes an “equipment set” for a combat aviation brigade in South Korea. This equipment set comprises the helicopters associated with a full-spectrum combat aviation brigade and all of its subordinate units, including two attack reconnaissance battalions, one assault helicopter battalion, a general support aviation battalion, and an aviation support battalion. The Bureau’s proposal does not include this “equipment set” and does not specify whether the Blackhawk helicopters from the equipment set would be retained in the Army’s force structure. Consequently, we did not count those helicopters in figure 2 above.

<sup>b</sup>The Bureau’s proposal would include four attack reconnaissance battalions that would be equipped with 18 of the 24 AH-64E Apache helicopters typically assigned to these types of units.



## Introduction (cont.)—Analyses of the Army’s and Bureau’s Force-Structure Proposals

- In July 2014, the Deputy Secretary for Defense tasked the Director for the Office of the Secretary of Defense’s Cost Assessment and Program Evaluation (CAPE) office with leading an analytic team comprised of senior officers and officials from DOD; Headquarters, Department of the Army; and the Bureau. The team was directed to analyze the Army’s and Bureau’s force structure proposals. Based on this review the team agreed that:
  - The Bureau’s proposal would increase Army aviation costs over the Army’s proposal by between \$90 million and \$180 million annually and could increase the up-front costs of implementing the force-structure proposal by nearly \$570 million.
  - The Army’s proposal would generate up to one-fifth more unit capacity—meaning units that are available to meet mission requirements—than the Bureau’s alternate proposal.
  - The Bureau’s proposal would require Army National Guard Apache units in multi-component combat aviation brigades to be mobilized during peacetime for one year out of every four to five years—a tempo that exceeds practices over the last decade.
  - The use of multi-component units in the Bureau’s proposal presents training risk for operations due to planned training timelines much shorter than those experienced over the last decade.



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## Introduction (cont.)—Analyses of the Army’s and Bureau’s Force-Structure Proposals

- The Army staff analyzed and compared both force-structure proposals’ relative abilities to meet future combat requirements and costs. Bureau officials provided input to the Army’s analyses, and were kept informed of the Army’s progress and results. Bureau officials said that the Bureau did not conduct its own analysis because it does not have the expertise needed to assess the performance and costs of its own force-structure proposal.
- Based on its analysis and the CAPE study team’s conclusions, the Army judges that the Bureau’s proposal would create unacceptably high risk to the aviation mission and force structure. Specifically, the Army concluded
  - the Bureau’s proposal would result in not meeting combatant commander demands, inadequately trained formations, and less capable units; and,
  - mitigating these risks would require procuring additional Apache helicopters and Shadow aircraft (at a cost of \$4.4 billion) and sustaining unplanned force structure (costing \$338 million per year).

## Objectives

- In 2014, Senate Report 113-176 included a provision for GAO to undertake a broad review of the Army's force-structure decision-making processes, models, and analyses. Additionally, Pub. L. No. 113-291 included a provision for GAO to compare the assumptions, cost estimates, and support personnel implications underlying the Army's aviation force-structure proposal with those underlying the Bureau's alternate proposal.<sup>4</sup> This briefing
  - compares the assumptions underlying the Army's and the Bureau's respective combat aviation force-structure proposals,
  - evaluates the Army's analyses of the two proposals' respective capacities to meet projected combat requirements, and
  - evaluates the Army's cost analyses and comparison of both proposals.
- This briefing also identifies how the Army's and the Bureau's proposed force structures would result in differing support requirements for the Army's Combat Aviation Brigades (presented in app. II).

<sup>4</sup>S. Rep. No. 113-176 at 83 (2014) and The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291, § 1057 (2014).

## Scope and Methodology

- We performed our work at the Headquarters, Department of the Army, U.S. Army Training and Doctrine Command Analysis Center, and the U.S. Army Aviation Center of Excellence because these components were primarily responsible for analyzing the Army's proposal and the Bureau's alternate. We obtained perspectives on the Army's analyses from the National Guard Bureau, and from CAPE. Appendix III summarizes the organizations where we performed fieldwork.
- To address our objectives, we took the following steps:
  - Compared the assumptions identified for each force-structure proposal, and interviewed knowledgeable officials to determine their views of the cause of any differences.
  - Evaluated whether the Army's assessment of the two force-structure proposals' abilities to meet future combat demands was reasonable by comparing its methodology to generally accepted research standards for study design, which we developed in our prior work;<sup>5</sup> reviewing technical documentation associated with the Army's model; and interviewing officials at the Center for Army Analysis and CAPE.

<sup>5</sup>GAO, *Defense Transportation: Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report*, GAO-06-938 (Washington, D.C.: Sept. 20, 2006). To identify these standards, we reviewed research literature and DOD guidance. We specifically applied the standards relating to study design. See GAO-06-938 for more information.



## Scope and Methodology (cont.)

- We also evaluated the Army's cost analyses of the Army's and Bureau's proposals by comparing the Army's cost-estimating models and methodology for preparing these analyses to leading practices,<sup>6</sup> and evaluating the Army's use of these estimates against standards for internal control in the federal government.<sup>7</sup> Because the Army's proposal has been approved for implementation by the Army Chief of Staff, we also evaluated the Army's cost estimate for implementing its proposal and its anticipated annual costs against these criteria.
- We also created a data set using the Army's fiscal year 2014 and fiscal year 2020 personnel requirements documents for its combat aviation units, as well as composite personnel cost data. We worked with Army and Bureau officials to develop a definition for "support" and applied that definition as part of our analysis. We used data from these years because the Army did not begin implementing its proposed restructuring until the end of fiscal year 2014, and fiscal year 2020 is the year by which it is to be completed. We used the data set to compare the number and associated costs of military and civilian positions needed to support the Army's combat aviation brigades under each proposal.
- We also assessed the reliability of the Army's cost and personnel requirements data and cost-estimating models by reviewing documentation associated with the relevant data systems and interviewing knowledgeable officials. We determined the data were reliable for the purposes of our review.
- We met with officials from the Office of the Secretary of Defense; Headquarters, Department of the Army; and the National Guard Bureau to obtain oral comments on our preliminary briefing materials, and we incorporated their technical comments as appropriate.

<sup>6</sup>GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009). The methodology outlined in the Cost Estimating and Assessment Guide is a compilation of best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of an acquisition program. See GAO-09-3SP for more information.

<sup>7</sup>We specifically applied federal standards related to information and communications. See GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: November 1999).

## Summary

- The Army and the Bureau agree on assumptions pertaining to strategy and the potential demand for combat aviation forces, but disagree on other assumptions such as the Army's budget constraints and how Army National Guard units would be trained, mobilized, and used in combat.
- The Army's analyses of the proposals' abilities to meet projected demand for forces were based on a reasonable methodology that met several generally accepted research standards for study design, which require the identification and consistent application of assumptions and the use of sensitivity analysis, but further sensitivity analysis could have been beneficial to decision makers.
  - The Army's analyses were based on DOD's classified planning scenario, and the Army applied many assumptions consistently across both proposals; however, the Army's analyses did not evaluate how varying the classified planning scenario—either by varying the rate at which units would deploy into a major combat operation in the scenario or the duration of the major combat operation—would affect the performance of the proposals.
  - In our view, the Army's analyses were based on a model and methodology that provides a reasonable approach for comparing the Army's and Bureau's force structure proposals, but varying the demand scenario could have been beneficial to decision makers.

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## Summary (cont.)

- The Army's cost analyses are based on relevant, sufficiently reliable, and timely estimates that enabled the Army to compare the costs of its and the Bureau's force structure proposals; however, the estimates were of limited value for projecting the actual costs of the Army's proposal.
  - **Operations and Support Costs:** In its analyses, the Army found that there was little difference between the proposals' estimated annual operations and support costs. We found that these estimates were substantially comprehensive and well documented, based on historic funding and manning levels, and that they applied assumptions comparably to each proposal. The estimates were limited because they did not reflect uncertainties about personnel, operations, or readiness of individual units, all of which affect potential costs. Additionally, based on its analyses the Army subsequently stated that additional force structure would need to be created to offset risks created by the Bureau's proposal. The Army estimated that the annual cost of sustaining this additional force structure would be about \$338 million. However, this cost was not included in the Army's original estimate, and we did not validate its reliability.
  - **Implementation Costs:** The Army's estimates of the proposals' implementation costs included costs associated with pilot training and aircraft acquisitions, but excluded some battalion and command-level costs. The key difference between the two proposals is how many Apache helicopters would be needed. The Army's proposal calls for 690 Apache helicopters. The Bureau's proposal would require 11 additional Apache helicopters at a cost of at least \$220 million. However, the Army stated that the Bureau's proposal would increase risk without acquiring a total of 115 additional helicopters and associated equipment, resulting in a total implementation cost of \$5.52 billion for the Bureau's proposal.



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## Objective 1: Assumptions Regarding Strategy, Resources, and Component Roles

- The Army and the Bureau agree on assumptions about strategy and the anticipated future demands for combat aviation that underlay their force structure proposals, but differ on other assumptions about how Army National Guard units would be used.
- In summary, Army and Bureau officials
  - agree on the military strategy, anticipated demand for forces, near-term training resources, and Army National Guard readiness requirements (slide 16) and
  - disagree on the availability of resources, as well as on Army National Guard characteristics such as how its units will be trained, utilized, mobilized, and deployed (slide 17).



## Objective 1: Assumptions Regarding Strategy, Resources, and Component Roles (cont.)

The Army and the Bureau agree on the following assumptions:

- **Military Strategy:** The armed forces will need to be able to simultaneously defend the homeland; conduct sustained, distributed counterterrorist operations; and deter aggression and assure allies through forward presence and engagement in multiple regions. If deterrence fails, U.S. forces need to be able to defeat a regional adversary in a large-scale conflict, and deny the objectives of—or impose unacceptable costs on—a second aggressor in another region.
- **Demand for Forces:** The base planning scenario for sizing and shaping the Army's force is Integrated Security Construct—B (Scenario 3), which Army and Bureau officials told us is one of three planning scenarios in DOD's 2014 classified planning guidance.
- **Near-Term Training Resources:** The priority for resourcing in the near term (fiscal years 2016-2019) will be on ensuring the full readiness of forces that expect to deploy and fight upon notification. Those forces include the global response force, and forces deploying next into combat operations. The remainder of the force will be subject to tiered readiness.
- **Readiness:** For any given mission, prior to deployment, the Army National Guard will meet the same training and readiness standards as regular Army soldiers with the same mission. The Army National Guard will be ready and available to operate in peacetime, in wartime, and in support of civil authorities for its assigned mission set, within the context of the Army's cyclical readiness model.



## Objective 1: Assumptions Regarding Strategy, Resources, and Component Roles (cont.)

**Table 2: Differing Assumptions between the Army’s and National Guard Bureau’s Force-Structure Proposals**

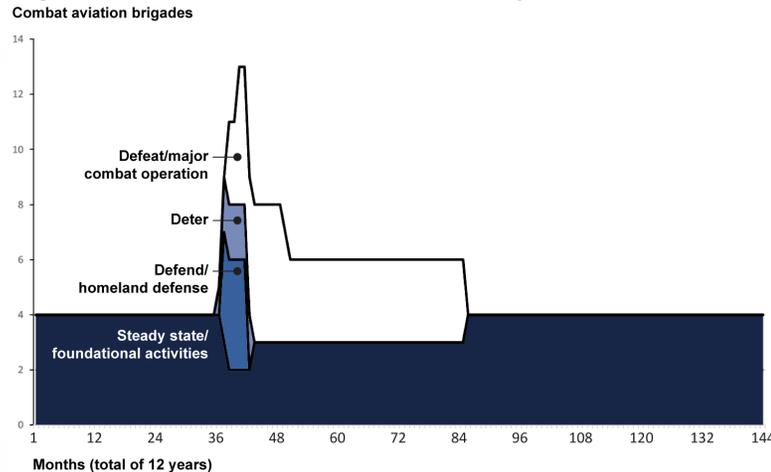
Category	Army position	National Guard Bureau (Bureau) position
Base budget	Army officials said that they anticipate the Army will continue to face budget pressures.	Bureau officials agree that the Army may continue to face constrained budgets, but stated that the Army should not base long-term force-structure decisions on short-term funding challenges.
Army National Guard training	Army officials stated that the Army may not have sufficient warning, or the resources to provide sufficient premobilization and postmobilization training time, to prepare Army National Guard full-spectrum combat aviation brigades for deployment against major combat operation missions.	Bureau officials stated that Army National Guard full-spectrum combat aviation brigades will be able to meet future mission requirements and deployment timelines given sufficient training resources and adequate notification and noted that historically the Army has been able to provide adequate advance notice.
Army National Guard dwell time	Army officials stated that for planning purposes they assumed that Army National Guard units will follow the Department of Defense’s policy of 4 years of dwell time—time between deployments—for each year mobilized during unplanned combat operations.	Bureau officials stated that for planning purposes they assumed Army National Guard units would follow a policy of 2 years of dwell time for each year mobilized during unplanned combat operations.

Source: GAO analysis of Army and National Guard Bureau data. | GAO-15-430R

## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces

- In October 2014, the Army analyzed the extent to which its force-structure proposal and the Bureau's alternate proposal would provide enough combat aviation brigades to meet anticipated requirements for a variety of different mission types (see fig. 3). The Army used the Department of Defense's (DOD) classified planning scenario (Integrated Security Construct—B) when assessing the proposals.

**Figure 3: Unclassified Depiction of the Projected Demand for Combat Aviation Brigades**



Source: U.S. Army Training and Doctrine Command Analysis Center. | GAO-15-430R

Note: According to Army officials, the DOD planning scenario is unclassified unless a specific location is referenced when depicting the scenario. Mission types include the following—

**Steady State / Foundational Activities:** Activities the Joint Force conducts by rotating forces globally to achieve strategic and operational interests. These include activities to build security globally, preserve regional stability, deter adversaries, and support allies and partners.

**Defeat / Major Combat Operations:** One of the four missions outlined in the 2012 Strategic Guidance and 2014 Quadrennial Defense Review (defeat an adversary). Specifically, U.S. forces will be prepared to defeat a regional adversary in a large-scale multiphased campaign in order to achieve national and strategic objectives.

**Deter:** U.S. forces will be able to prevent acts of aggression in one or more theaters. Specifically, "deter" is the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs the perceived benefits.

**Defend / Homeland Defense:** U.S. forces will defend U.S. territory from direct attack by state and nonstate actors. The Army will be positioned to come to the assistance of domestic civil authorities in the event such defense fails or in case of natural disasters, potentially in response to a very significant or even catastrophic event.

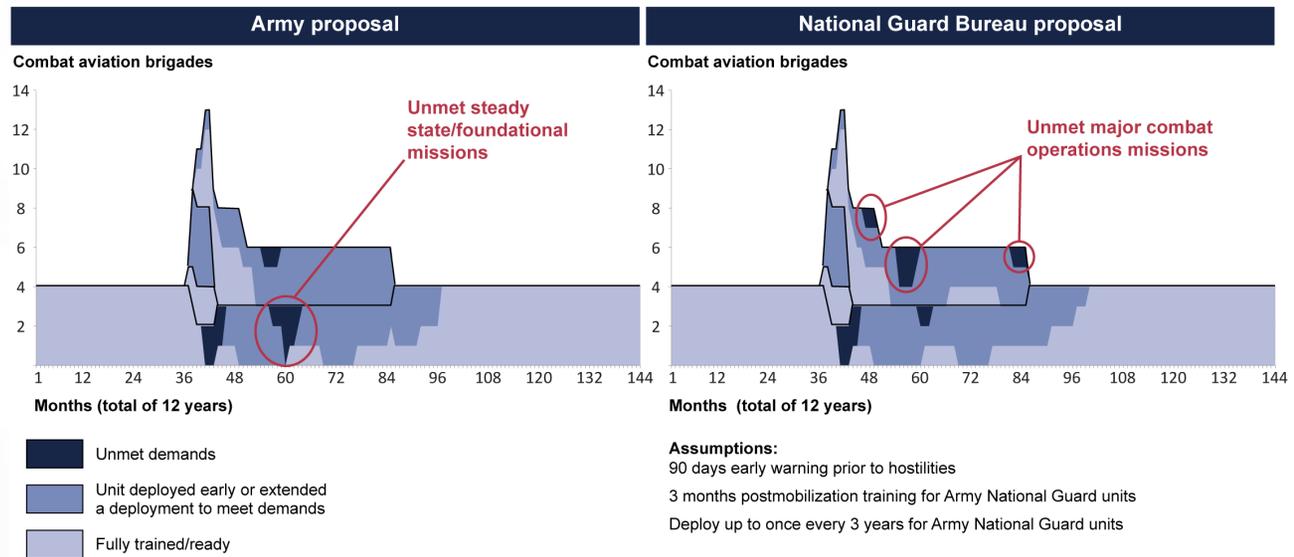
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## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

- The Army's October 2014 analysis sought to determine whether the Bureau's proposal could better meet the projected demand for units as compared to the Army's proposal, under assumptions favorable to the Bureau's option. Such assumptions included a 90-day notification prior to major combat operations, successful completion of a 3-month postmobilization training period, and deployments of once every 3 years for Army National Guard units.
- The October 2014 analysis found that under these favorable conditions, the Army's option was better able to meet the modeled demand for units, although both proposals met most mission requirements. The Army's proposal fully met 93 percent of modeled requirements and the Bureau's proposal fully met 91 percent of these requirements, with the Army's proposal better addressing major combat operation requirements and the Bureau's proposal better addressing foundational mission requirements (see fig. 4). However, the Army's analysis did not show potential risks if the favorable assumptions were incorrect.
  - Army officials who completed the analysis said that, in their view, the analytical results did not provide a meaningful basis for choosing between the two force-structure proposals. Bureau officials agreed that the differences between the two proposals were insignificant.
  - However, in making these assumptions, Army officials said that reviews completed by CAPE and RAND Corporation suggest that the postmobilization training period modeled would be infeasible and unrealistic. Specifically, they stated that even with 12-month advanced notice for deployment to lower-risk missions, Army National Guard AH-64 units required between 88 and 118 postmobilization days. Bureau officials disagreed with the Army's assessment and stated that the Army National Guard has met deployment timelines in the past and would continue to do so under its proposal.

## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

**Figure 4: Modeling Results Comparing Army and National Guard Bureau Proposals (October 2014)**



Source: U.S. Army Training and Doctrine Command Analysis Center. | GAO-15-430R

Note: The Army's study prioritizes mission fulfillment as follows (in order of importance and priority): (1) Major Combat Operations, (2) Deter, (3) Enhanced Protective Posture / Homeland Defense, and then (4) Foundational Activities.

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## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

- In January 2015, the Army completed a sensitivity analysis to determine whether their conclusions would vary if the analysis used differing assumptions. Army officials told us that they modeled at least 15 different variations within the context of DOD's classified planning scenario that collectively varied the number of units needed to fill foundational mission requirements, and examined an excursion that included a second major combat operation mission with varying demands for combat aviation brigades.
- The Army also analyzed its proposal relative to the Bureau's original January 2014 proposal and adopted the following assumptions:
  - less warning time (30 days) prior to the beginning of major combat operations,
  - Army National Guard attack reconnaissance battalions would need a longer postmobilization training period (4 months) before they could deploy, and
  - Army National Guard units could deploy up to once every 3 years, which was consistent with the October 2014 analysis.

## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

- This sensitivity analysis found that the Bureau's proposal was less able to meet mission demands than the Army's proposal when modeled using differing assumptions.
  - The Bureau's proposal experienced more shortfalls during the peak period of major combat operations (which officials said are characterized by high-intensity combat).
    - Both options demonstrated shortfalls for the first 5 months of the major combat operations period.
    - However, the Army's proposal met all demands during the final 4 months of the peak demand period while the Bureau's proposal met 83 percent of the demands.
  - The Bureau's proposal also experienced shortfalls during critical postcombat operations that officials said require the Army to relieve units that have been deployed for extensive periods. Specifically:
    - The Army determined that the Bureau's proposal would result in a shortfall of two or more combat aviation brigades during the first 15 months of stability operations 20 percent of the time.
    - In contrast, the model generated this magnitude of a shortfall in the availability of units only 3 percent of the time when using the Army's proposal.

## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

- We found that the Army's analysis is based on a model and methodology that provides a reasonable approach for comparing the Army's and Bureau's force-structure proposals.
  - Generally accepted research standards for study design, which we derived in our prior work,<sup>8</sup> require that credible and well-designed studies clearly identify their assumptions and constraints; ensure that assumptions are necessary, reasonable, and consistently applied; and include sensitivity analyses to assess results across a variety of conditions, among other things.
  - We found that the Army's analysis met several of these design standards in that it
    - varied the level of readiness for each combat aviation brigade within its model,
    - identified assumptions and constraints underlying its analysis,
    - used the same assumptions throughout its analysis when assessing the proposals, and
    - based its assumptions for the mobilization and deployment of units on DOD and Army policies and guidance.
  - However, we found that the Army's sensitivity analysis did not evaluate how the proposals would have performed if the Army modified DOD's classified planning scenario to vary (1) the rate at which units deploy into a major combat operation or (2) the duration of the major combat operations mission.

<sup>8</sup>GAO-06-938.

## Objective 2: Proposals' Capacities to Meet Potential Demand for Forces (cont.)

- Army officials stated that they did not complete sensitivity analysis on the rate of deployment of units or the duration of major combat missions because they were directed to use DOD's approved planning scenario for sizing and shaping the Army's forces. These officials said that by using DOD's planning scenario they were able to
  - assess the proposals against a range of conditions;
  - complete a fair and objective analysis that enabled them to effectively differentiate between the force-structure proposals; and
  - ensure that their analysis would be seen as credible by DOD officials and other stakeholders.
- Bureau officials said that DOD's classified planning scenario assumes the need to deploy a large number of units in a short period and that this assumption favors the active Army. However, they noted that the Army has rarely, if ever, been required to meet such an aggressive deployment timeline in the past and, as a result, it may not be appropriate to allocate aviation capabilities based on this assumption.
- Officials from DOD's CAPE and the Center for Army Analysis agreed that the analyses have limitations but noted that in their view the Army's conclusions were correct. However, CAPE officials stated that additional sensitivity analysis would have departed from DOD practices for force structure planning and that the Army followed DOD accepted practices for sensitivity analysis within force structure planning processes.



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## Objective 3: Cost Analyses and Comparative Cost Estimates

- In March 2014, the Army estimated and compared the annual projected operating costs of its force-structure proposal and the Bureau's alternate, and found that the proposals would cost \$6.75 billion and \$6.80 billion, respectively, per year after implementation.
- The Army stated that the Bureau's proposal would leave two Army divisions unable to routinely train with their respective AH-64 battalions. According to the Army, if deployed to war under the Bureau's proposal, these divisions would be insufficiently trained, creating unacceptable risk to the force.
  - To address this risk, Army officials stated that the Army would need to obtain additional force structure, which would cost about \$338 million annually to sustain. We did not validate the accuracy of this estimate.
  - Bureau officials told us that they disagree that the Bureau's proposal presents unacceptable risk. They stated that the Bureau's proposal would provide more attack reconnaissance battalions than the Army's original proposal, and that additional force structure would not be needed.
- These estimates are summarized in table 3.



## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

**Table 3: Comparison of Army and National Guard Bureau Proposals' Estimated Annual Operating Costs upon Implementation (as of March 2014)**

Fiscal year 2014 dollars in billions

	Army proposal	National Guard Bureau (Bureau) Proposal
<b>Active-Component Structure</b>		
- Operations and Maintenance	\$1.64	\$1.58
- Personnel	2.27	2.20
<b>Subtotal, Active-Component Structure</b>	<b>\$3.91</b>	<b>\$3.78</b>
<b>Reserve-Component Structure</b>		
- Operations and Maintenance	0.68	0.76
- Personnel	0.61	0.64
- Military Technicians / Supplemental Training	0.30	0.36
<b>Subtotal, Reserve-Component Structure</b>	<b>\$1.59</b>	<b>\$1.76</b>
Pilot Training <sup>a</sup>	1.25	1.26
<b>Total Estimate</b>	<b>\$6.75</b>	<b>\$6.80</b>
<b>Army-Identified Additional Costs<sup>b</sup></b>	<b>\$0</b>	<b>\$0.34</b>

Source: GAO analysis of Army data. | GAO-15-430R

Note: These cost estimates do not include an additional \$0.06 billion per year under each proposal to operate three Light Utility Helicopter (LUH-72) battalions.

<sup>a</sup>The Army's March 2014 pilot training estimate was incomplete, and the Army provided us with an updated estimate, reflected in this table, in February 2015.

<sup>b</sup>The Army has stated that it would need to sustain additional force structure if the Bureau's proposal were implemented in order to mitigate operational risk. We did not evaluate the reliability of this estimate.

## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

- The Army also estimated the costs to implement the two proposals, which included the costs of acquiring helicopters and training pilots and crews to fly different aircraft (summarized in table 4). The Army estimated that its proposal would cost about \$1 billion to implement, with \$0.81 billion in onetime costs to acquire and operate 100 new LUH-72 Lakota aircraft that would replace the TH-67 training helicopter and OH-58 A/C helicopter, which are being retired.
- The Army's proposal would retain 690 AH-64 Apache helicopters; the Bureau's proposal would acquire 11 more Apaches—at a cost of \$220 million to \$420 million,<sup>9</sup> plus \$150 million for additional Shadow aircraft.
  - The Army's proposal includes an unmanned equipment set with 48 Apache helicopters in South Korea; the Bureau's proposal reallocates this equipment set to active Army units that would rotationally deploy to Korea and other locations worldwide.
  - The Army's proposal includes 67 Apache helicopters as part of a logistics and maintenance fleet; whereas the Bureau's proposal includes 57 Apache helicopters.
- Army officials stated that eliminating the equipment set would leave less time for units to train before deployment, which would increase the likelihood that units will be unprepared for an unexpected crisis. They added that reducing the logistics fleet would require the Army to extend its Apache modernization program and increase costs.
- Army officials stated equipping the two additional battalions discussed previously, replenishing the equipment set, and meeting logistical and maintenance requirements would require 115 additional Apache helicopters (104 more than proposed by the Bureau), and associated aircraft, with a resulting total estimate of \$5.52 billion.

<sup>9</sup>The Bureau estimate assumes that there will be no additional costs beyond \$220 million to acquire the helicopters, based on Army acquisition data. However, the CAPE review team reported the costs to be \$420 million, because the Bureau's proposal would acquire aircraft at a lower rate and over an extended schedule.



## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

**Table 4: Comparison of Estimated Implementation Cost for the Army and National Guard Bureau Proposals (as of December 2014)**

Fiscal year 2014 dollars in billions

	Army proposal	National Guard Bureau (Bureau) proposal
<b>Aircraft Acquisition</b>		
- Apache helicopter and Shadow unmanned aircraft <sup>a</sup>	\$0	\$0.57
- Light utility helicopter <sup>b</sup>	0.81	0.81
<b>Subtotal, Aircraft Acquisition</b>	<b>\$0.81</b>	<b>\$1.38</b>
Pilot training <sup>c</sup>	0.17	0.10
<b>Total Estimate</b>	<b>\$0.98</b>	<b>\$1.48</b>
<b>Army-Identified Additional Costs<sup>d</sup></b>	<b>\$0</b>	<b>\$4.04</b>

Source: GAO analysis of Office of the Secretary of Defense and Army data. | GAO-15-430R

<sup>a</sup>Estimates based on Army acquisition data. The Bureau's proposal would acquire 11 additional Apache helicopters at an estimated cost of \$220 million. Additionally, the Cost Assessment and Program Evaluation group estimates that the program could incur \$200 million in added procurement costs due to a lower production rate and an extended schedule. The estimate also includes \$150 million to equip 6 RQ-7B Shadow platoons in the Army National Guard.

<sup>b</sup>Directed by the Office of the Secretary of Defense in a revision to the Army's fiscal year 2015 proposed budget submission. Includes about \$560 million in onetime procurement and about \$250 million in onetime fleet modifications, operations, and sustainment costs.

<sup>c</sup>Includes pilot qualifications on new aircraft and advanced pilot training.

<sup>d</sup>According to the Army, implementing the Bureau's proposal would require 104 additional Apache helicopters (115 new acquisitions in total), at an additional cost of \$3.96 billion, and equipment for three additional RQ-7B Shadow platoons (nine platoons in total) at an additional cost of \$75 million.



## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

- Federal standards for internal control identify the need for agency decision makers to have relevant, reliable, and timely information that enables them to carry out their responsibilities.<sup>10</sup>
- The Army's estimates of annual costs were relevant and sufficiently reliable because the operations, maintenance, and military personnel cost estimates—which constitute the majority of the annual costs associated with the two proposals—reflected key characteristics of high-quality and reliable cost estimates.<sup>11</sup> We found that the estimates were:
  - substantially comprehensive, in that they covered all units affected by each force structure proposal;
  - substantially well documented by describing in detail how they were developed; and
  - based on historical funding and manning levels, with assumptions comparably applied to each proposal.
- The Army's implementation cost estimates were also relevant and sufficiently reliable because the key difference between the two proposals—the cost for additional Apache helicopters—was based on the agreed-upon programmatic cost estimates for acquiring the most-modern version of the helicopter.

<sup>10</sup>GAO/AIMD-00-21.3.1.

<sup>11</sup>GAO-09-3SP.



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## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

- Although the Army's cost analyses are based on relevant, sufficiently reliable, and timely estimates that compare the costs of the Army's and the Bureau's force-structure proposals, our analysis found that the Army's cost estimates for implementing its proposal excluded some costs. In the U.S. Army Reserve, where one attack reconnaissance battalion has already begun converting to fly UH-60 Blackhawks, officials told us the process of converting a unit will increase costs at the battalion and command level. The officials added that such costs will include pay and allowances, unique equipment fielding, aircraft maintenance, training to increase individual and crew proficiency, and other supply and administrative actions.
- The Army agreed that its cost estimates for implementing the proposals were limited to include the costs associated with pilot training and aircraft acquisitions, and that not all operational costs were covered by its estimate. Officials told us that the Army intends to fund its aviation restructuring effort with \$1.46 billion that it reprogrammed through fiscal year 2019 from cancelled OH-58D Kiowa Warrior modernization programs, and other transfers from canceled OH-58D pilot training.
- Army officials added that the reprogramming will make it possible to restructure the aviation force without increasing the Army's overall planned expenditures on aviation through fiscal year 2019. Army officials told us that should the Army be delayed in implementing its force-structure proposal it would incur costs beyond what has been planned for within its budget. To defray these costs, the officials said they would likely be forced to delay critical helicopter modernization programs.



## Objective 3: Cost Analyses and Comparative Cost Estimates (cont.)

- The Army's cost analyses of annual operating costs were suitable for the purpose for which they were prepared, but were limited in projecting actual costs and cost savings, should its proposal be implemented.
  - The Army's estimates of annual operations, personnel, and maintenance costs did not include a risk and uncertainty analysis that accounted for potential ranges of personnel and operational tempo requirements under its proposal and the Bureau's alternate. As a result, the Army prepared a point estimate of the costs of each proposal, without determining where this estimate fell along the range of possible costs.
  - Additionally, the Army's analysis did not account for cost differences among similar units as they moved through the Army's rotational readiness cycle. Rather, the Army assumed that all units in each proposal were neither returning from deployment (when their relative costs would be low) nor preparing to deploy (when their relative costs would be high). The Army also did not include any additive costs of mobilizing reserve component units when it estimated the proposals' costs. As a result, the Army's estimate did not estimate costs across the full range of operations.
- Army officials told us that their approach to estimating costs was intended to permit a comparison of the two proposals. The officials added that their estimates were not developed based on Army programming data, and were not intended to be used to develop future budget proposals.
- CAPE officials stated that the use of point estimates is a DOD accepted practice for estimating operations costs and other costs, especially when these estimates are based on a large volume of historical data.

## Agency Views

- We provided a draft of this briefing to the Army, the National Guard Bureau, and CAPE and met with officials to obtain their comments.
  - The Army generally agreed with our analysis. Army officials stated that the Army has sought to address the Bureau's concerns with its force-structure proposal and has sought to mitigate the Bureau's concerns where possible. For example, the proposal was modified at the Bureau's request to include the acquisition of 100 new LUH-72 Lakota helicopters as training aircraft, rather than transfer these aircraft from Army National Guard units. However, Army officials emphasized that in their view the Bureau's proposal creates unacceptably high risk for the force and if it were implemented it could result in the Army providing inadequately trained and less-capable units that would be unable to meet combatant commander requirements. Officials further stated that without additional funding being allocated to address the risk under that force structure, the Army would need to reprogram funds or cancel other long-term programs or both.
  - The Bureau generally agreed with our analysis and the limitations that we identified. The Bureau stated that the Army's analysis could have significantly benefited from more sensitivity analysis regarding the scenario used to model the demand for forces. Additionally, the Bureau stated that the Army's analysis was constrained by current policies pertaining to how often Army National Guard units can be mobilized.
  - CAPE officials generally agreed with our analysis.
- We incorporated these perspectives and other technical comments, as appropriate, throughout the briefing.

# Appendixes



## Appendix I: Comparison of Army and National Guard Bureau Force Structure Proposals, as of February 2015

Proposal	Component	Number and type of battalions	AH-64E Apache	UH/HH-60 Blackhawk	CH-47 Chinook	UH-72 Lakota	
Army	Active	22 Attack Reconnaissance <sup>a</sup>	528				
		11 Assault Helicopter		330			
		11 General Support Aviation		253	132		
	Reserve <sup>c</sup>	0 Attack Reconnaissance					
		20 Assault Helicopter <sup>b</sup>		600			
		15 General Support Aviation		495	192		
	6 Security and Support					192	
National Guard Bureau (Bureau)	Active	18 Attack Reconnaissance	432				
		10 Assault Helicopter		300			
		10 General Support Aviation		230	120		
	Reserve <sup>c</sup>	6 Attack Reconnaissance <sup>d</sup>	120				
		18 Assault Helicopter		540			
		15 General Support Aviation		495	192		
	6 Security and Support					192	

Source: GAO analysis of Army and National Guard Bureau data. | GAO-15-430R

<sup>a</sup>The Army's proposal includes two battalions' worth of equipment in South Korea. The Bureau's proposal does not include these battalions.

<sup>b</sup>Includes two Assault Battalions in the U.S. Army Reserve that are in the process of converting from Attack Reconnaissance battalions.

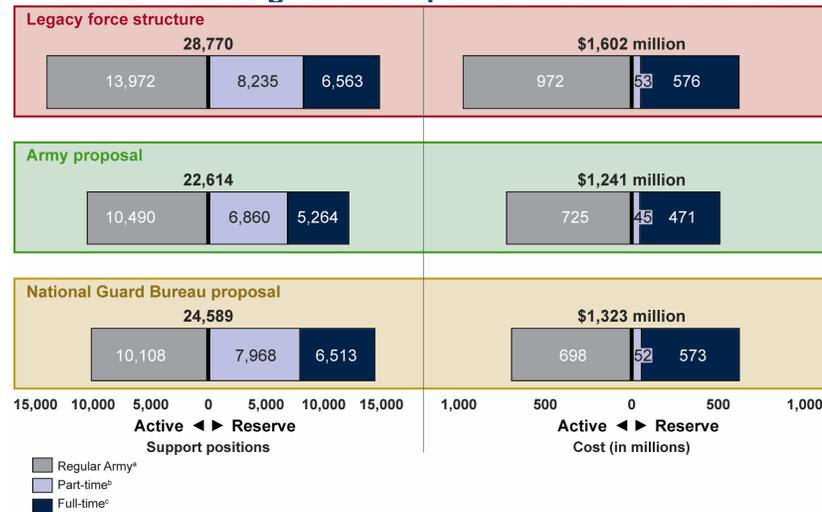
<sup>c</sup>"Reserve" includes the Army National Guard and the U.S. Army Reserve. It also includes two Theater Aviation Brigades, which are units stationed inside the United States that specialize in assault, heavy lift, aeromedical evacuation, and air movement.

<sup>d</sup>Includes 2 Attack Reconnaissance Battalions with 24 Apache helicopters each, and 4 battalions with 18 Apache helicopters each.

## Appendix II: GAO Analysis of Personnel Support to Combat Aviation Brigades

- The Army’s proposal and the National Guard Bureau’s proposal will both result in a reduction in the overall number of required support positions, as shown in figure 5.
- We define “support” as personnel that directly or indirectly sustain combat aviation units—excluding flight crews and pilots. This includes mechanics, aviation operations personnel, and unmanned aircraft personnel.

**Figure 5: Combat Aviation Brigades—Required Positions and Estimated Cost to Fund**



Source: GAO analysis of Army and National Guard Bureau information. | GAO-15-430R

Notes: Some numbers may not sum up due to rounding.

<sup>a</sup>Regular Army refers to soldiers that are assigned to the active component when not deployed.

<sup>b</sup>Part-time refers to soldiers that are members of the Army Reserve or the Army National Guard and serve as either traditional reservists or guardsmen.

<sup>c</sup>Full-time includes full-time military personnel (active Guard/Reserve) and Military Technicians.



## Appendix II: GAO Analysis of Personnel Support to Combat Aviation Brigades (cont.)

**Table 5: GAO Analysis of Required Positions and Estimated Cost to Fund Army and National Guard Bureau Force-Structure Proposals (as of February 2015)**

		Army proposal		National Guard Bureau Proposal	
		Full-time support positions <sup>a</sup>	Military positions	Full-time support positions <sup>a</sup>	Military positions
Active	Full-Spectrum Combat Aviation Brigade		10,490		10,108
Reserve	Full-Spectrum Combat Aviation Brigade			2,381	2,480
	Expeditionary Combat Aviation Brigade	5,264	6,860	4,131	5,488
<b>Total number of positions</b>		<b>5,264</b>	<b>17,350</b>	<b>6,513</b>	<b>18,076</b>
<b>Total cost (fiscal year 2014 dollars in millions)<sup>b</sup></b>		<b>\$471</b>	<b>\$768</b>	<b>\$573</b>	<b>\$749</b>

Source: GAO analysis of Army and National Guard Bureau data. | GAO-15-430R

Notes: Some numbers may not sum up due to rounding.

<sup>a</sup>All data pertaining to the number of full-time support personnel required for each type of battalion were provided by the Army National Guard.

<sup>b</sup>Cost data for the full-time support positions were reported at \$115,601 per active Guard/Reserve and \$76,788 per Military Technician by the Army National Guard.



## Appendix III: Fieldwork

Organization	Group
Office of the Secretary of Defense	<ul style="list-style-type: none"><li>• Cost Assessment and Program Evaluation</li></ul>
Department of the Army	<ul style="list-style-type: none"><li>• Department of the Army Military Operations-Aviation</li><li>• Deputy Assistant Secretary of the Army—Cost and Economics</li><li>• Office of the Army Deputy Chief of Staff, Programming</li><li>• Office of the Army Deputy Chief of Staff, Program Analysis and Evaluation</li><li>• Office of the Army Deputy Chief of Staff, Operations and Plans</li><li>• U.S. Army Aviation Center of Excellence</li><li>• U.S. Army Capabilities Integration Center</li><li>• U.S. Army Force Management Support Agency</li><li>• U.S. Army Forces Command</li><li>• U.S. Army Training and Doctrine Command Analysis Center</li></ul>
National Guard Bureau / Army National Guard	<ul style="list-style-type: none"><li>• Support Special Assistant to the Director, Army National Guard Liaison for Aviation Transformation</li><li>• Army National Guard Aviation</li><li>• Personnel Programs, Resources and Manpower</li><li>• Army National Guard, Plans</li><li>• Army National Guard attack reconnaissance battalion (1-104th)<sup>a</sup></li><li>• Force Management Division</li></ul>
U.S. Army Reserve	<ul style="list-style-type: none"><li>• Office of the Chief of the Army Reserve</li><li>• 11th Aviation Command Headquarters</li><li>• U.S. Army Reserve assault helicopter battalion (8-229th)<sup>a</sup></li></ul>

Source: GAO. | GAO-15-430R

<sup>a</sup>The two units we visited were chosen based on whether they were undergoing conversion, their deployment history, and their training location. While the information obtained at these units is not generalizable, it enabled us to obtain the perspectives of commanders and servicemembers who may be affected by the two force structure proposals discussed in this report.

**Enclosure II: Comments from the Department of Defense.**



**SECRETARY OF THE ARMY  
WASHINGTON**

**INFO MEMO**

04-14-15 13:48 OUT

**FOR: DIRECTOR, DEFENSE CAPABILITIES MANAGEMENT, U.S.  
GOVERNMENT ACCOUNTABILITY OFFICE  
DEPARTMENT OF DEFENSE INSPECTOR GENERAL**

**FROM: John M. McHugh, Secretary of the Army**

A handwritten signature in black ink, appearing to read "John M. McHugh", is written over the printed name in the "FROM" field.

**SUBJECT: Army Comments on GAO Draft Report, "FORCE STRUCTURE: Army's  
Analyses of Aviation Alternatives" dated March 27, 2015 (GAO-15-430R) (GAO Code  
351967)**

I am pleased to provide the attached approved comments on the subject GAO draft report. Should you have additional questions regarding the Army's position on this matter, please contact the undersigned action officer.

**COORDINATION: NONE**

**Attachment:  
As stated**

**Prepared By: Mr. Kerry Schindler, (703) 693-3160**



**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE DEPUTY CHIEF OF STAFF, G-3/5/7**  
**400 ARMY PENTAGON**  
**WASHINGTON, DC 20310-0400**

April 10, 2015

Mr. John Pendleton  
Director, Defense Capabilities Management  
U.S. Government Accountability Office  
441 S Street, NW  
Washington, DC 20548

Dear Mr. Pendleton,

The Department of Defense acknowledges receipt of the draft report. We concur with your findings that the Army's cost estimates and demand and capability analyses used a reasonable methodology and were suitable for comparing the Army's Aviation Restructure Initiative (ARI) and National Guard Bureau (NGB) proposals. The Department also concurs that the Army's plan is less expensive and better meets mission demands, which is in agreement with three separate reviews directed by then Deputy Secretary of Defense Carter, Acting Deputy Secretary of Defense Fox, and Deputy Secretary of Defense Work.

We also agree with your assessment of two key differences between the Army proposal and National Guard proposal for the congressionally identified tasks of costs and warfighting demand.

Our first area of agreement with the GAO report is that the Army's plan is less expensive than the National Guard plan. While the proponents of the National Guard proposal believe that the Army should not base long-term force structure decisions on current funding challenges, the Army, and OSD, fundamentally disagree that the current fiscal environment is a short-term problem. ARI is an affordable and acceptable solution to meet current and future aviation requirements for the Army under the President's Budget. Furthermore, we believe the National Guard proposal is based upon overly optimistic assumptions and would create unacceptable risk. Such risk would force the Army to expend an additional \$4.5 billion in one-time procurement costs and approximately \$350 million annually to maintain sufficient airframes to adequately meet the operational demands of today and the future. These additional costs are based on our recent extensive experience deploying Apache units into combat.

The second area of agreement concerns warfighting demand, where your report affirms that the Army's ARI proposal better meets the DoD classified warfighting scenarios. While the NGB states that the OSD-directed classified warfighting scenarios should be set aside in judging the two proposals, the Army is obligated to use the plans directed by our civilian leaders and Combatant Commanders when establishing Army force structure. These leaders, both civilian and military, assessed acceptable risk and approved a National Security Strategy and related DoD planning documents that demand more ready forces to meet no-notice contingencies.

-2-

The Army leadership, as well as the leadership of the Department of Defense, agree with your assessment that the Army's Plan for ARI, which includes moving Apaches from the National Guard to the Regular Army, as well as Blackhawks from the Regular Army to the National Guard, is cost-effective, better supports Homeland Defense, and better meets the demands of our classified warfighting scenarios.

We are also providing you with direct input from the Office of Secretary of Defense for Cost Assessment and Program Evaluation (OSD-CAPE) and the Army National Guard.

Sincerely,

  
Gary H. Cheek  
Major General, U.S. Army  
Assistant Deputy Chief of Staff, G-3/5/7

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Katherine Siggerud, Managing Director, [siggerudk@gao.gov](mailto:siggerudk@gao.gov), (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

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## Public Affairs

Chuck Young, Managing Director, [youngc1@gao.gov](mailto:youngc1@gao.gov), (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548





TAB F - DoD Comment Letter,  
GAO Report (GAO-15-430R)





**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE DEPUTY CHIEF OF STAFF, G-3/5/7**  
**400 ARMY PENTAGON**  
**WASHINGTON, DC 20310-0400**

April 10, 2015

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Director, Defense Capabilities Management  
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The Army leadership, as well as the leadership of the Department of Defense, agree with your assessment that the Army's Plan for ARI, which includes moving Apaches from the National Guard to the Regular Army, as well as Blackhawks from the Regular Army to the National Guard, is cost-effective, better supports Homeland Defense, and better meets the demands of our classified warfighting scenarios.

We are also providing you with direct input from the Office of Secretary of Defense for Cost Assessment and Program Evaluation (OSD-CAPE) and the Army National Guard.

Sincerely,



Gary H. Cheek  
Major General, U.S. Army  
Assistant Deputy Chief of Staff, G-3/5/7

TAB G - OSD-CAPE Independent Cost Estimate  
of the ARI and the National Guard Alternative



# INDEPENDENT COST ANALYSIS OF THE ARMY AVIATION RESTRUCTURE INITIATIVE AND THE ARMY NATIONAL GUARD ALTERNATIVE

## REPORT TO THE CONGRESS



The estimated cost of this report or study for the Department of Defense is approximately \$7,340 for the 2015 Fiscal Year. This includes \$0 in expenses and \$7,340 in DoD labor.

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Office of the Secretary of Defense  
Cost Assessment and Program Evaluation



## OFFICE OF THE SECRETARY OF DEFENSE

1800 DEFENSE PENTAGON  
WASHINGTON, D.C. 20301-1800

COST ASSESSMENT AND  
PROGRAM EVALUATION

### EXECUTIVE SUMMARY

Senate Report 113-211 accompanying H.R. 4870, Department of Defense Appropriations Bill, 2015, requests that CAPE conduct an independent cost analysis of both the Army Aviation Restructure Initiative (ARI) and the Army National Guard Bureau (NGB) alternative. This report responds to that direction.

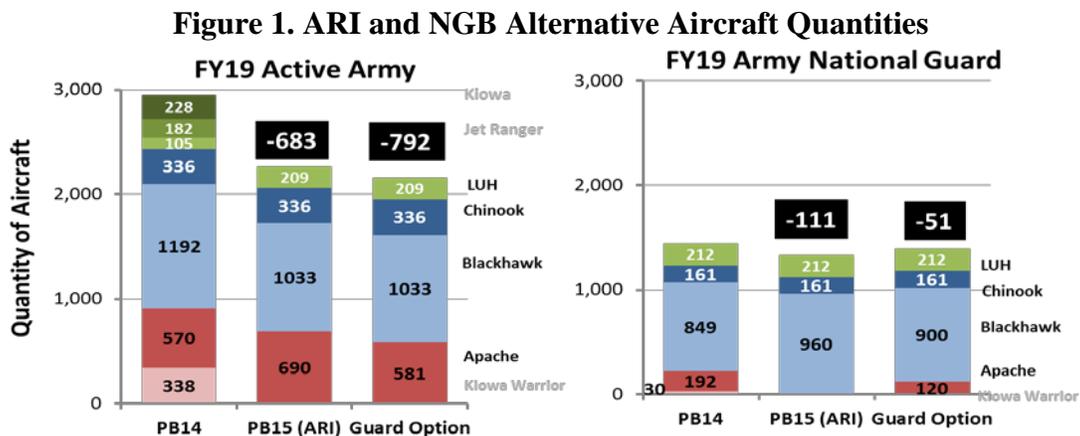
CAPE estimates ARI, once complete, will result in annual cost savings of \$906 million (Fiscal Year 2014 dollars) when compared to the fleet prior to ARI. The Army estimates ARI will save \$1.09 billion annually. As part of the independent cost analysis, CAPE assessed the Army ARI cost estimate method, sources, and results. While the CAPE and Army estimate differ because of varying operational tempo estimating methodologies, CAPE generally validated the Army estimating method and gross annual cost savings. CAPE also estimated the impact of the NGB alternative to ARI and found that it would result in \$730 million in annual savings, a relative difference of \$176 million. These relative differences are congruent with the cost analysis results from the Deputy Secretary of Defense directed, CAPE-led analytical 'Tiger Team' on Army Aviation that reviewed the two alternatives, reached shared understanding, and generated new analysis. The Tiger Team focused on operational issues along with cost and came to agreement that ARI provides less total force structure but more usable capacity, a higher readiness level, and has less training and operational risk than the NGB alternative.

CAPE estimates ARI one-time implementation costs of \$77 million compared to \$570 million for the NGB alternative. The Army estimates ARI will result in one-time cost savings and avoidance of \$12.12 billion, mostly due to the Army decision not to replace the Kiowa armed scout helicopter. CAPE was able to replicate the methodology and sources for the Army estimated one-time cost savings and avoidance but noted the avoidance estimates are projections based on long term plans outside the Future Years Defense Program (FYDP).

Overall, CAPE analysis confirms the Department position that ARI is a better approach. Unless otherwise noted, all cost figures in this report are in Fiscal Year 2014 dollars.

### ARI and NGB Alternative Background

During the President’s Budget Fiscal Year 2015 Review, the Army proposed a restructure of the Aviation enterprise designed to find savings because of impending reductions in its top-line. The Army proposed a reduction in force structure that divested all Kiowa scout helicopters (OH-58A, OH-58C, and OH-58D) and the current legacy training helicopter (TH-67) in order to keep modernized platforms. The result would be a reduced supply of attack/reconnaissance assets. This supply could only meet assumed continued high demand by deploying at high tempo in peacetime. Citing active units’ greater suitability for sustained high tempo peacetime operations, the Army proposed a transfer of aircraft amongst the Army and National Guard outlined in Figure 1 below. Under ARI, the Army would divest 683 aircraft (23% of the Army fleet) while the National Guard would divest 111 aircraft (8% of the National Guard fleet). This would be accomplished by transferring Guard Apache helicopters to the Army to replace Kiowa armed scout (OH-58D) aircraft while transferring Army Blackhawk helicopters to the National Guard. The National Guard agreed to the majority of changes under ARI but strenuously objected to the transfer of Apaches. The NGB alternative would: retain 120 Apaches in the Guard; divest 60 Blackhawk helicopters from the Total Army; and result in Army reductions of 792 aircraft (27%) and NGB reductions of 51 aircraft (4%).



### ‘Tiger Team’ on Army Aviation

Following the 10 July 2014 Council of Governors meeting, the Deputy Secretary of Defense directed establishment of a CAPE-led joint analytical ‘Tiger Team’ to analyze ARI and the NGB alternative, come to agreement where possible, and provide impartial analysis on capacity, risk, and cost. The team, comprised of members across the Department’s Staff, including key Army Staff and NGB Staff representatives, conducted a collaborative and impartial analysis of all relevant assumptions and data informed by stakeholder’s inputs and concerns. This process resulted in development of new analysis, shared understanding, and final conclusions—agreed to by participants—that ARI provides less total force structure but more usable capacity, a higher readiness level, and has less training and operational risk than the NGB alternative. Tiger Team cost analysis consciously focused on the differences between the two plans because NGB agreed with the majority of ARI. The NGB alternative was estimated to cost

\$89-176 million (M) more annually than ARI, and would incur additional one-time procurement costs of \$493M.

**CAPE Independent Cost Analysis and Assessment of Army Estimate**

The Tiger Team cost analysis was thorough but focused on the differences between the two alternatives as opposed to a bottom-up estimate of Army aviation costs. The analysis presented here builds such a bottom-up estimate. The analyses are congruent as the relative difference between the alternatives remains the same, but this report provides a more complete picture. Results of the CAPE independent cost analysis are presented in Table 1 below.

**Table 1. CAPE Independent Cost Analysis**

Total Costs (FY14\$B)	FY13 Fleet	ARI	NGB Alt
Annual Operating and Support (O&S)	\$7.12	\$6.12	\$6.30
Annual Institutional Training*	\$1.17	\$1.26	\$1.26
<b>Total Annual Costs</b>	<b>\$8.29</b>	<b>\$7.38</b>	<b>\$7.56</b>
<b>One-Time Costs</b>	-	<b>\$0.08</b>	<b>\$0.57</b>
*Includes ARI equipment set maintenance costs (\$14M/yr) and NGB Alt rotational transport costs (\$4M/yr)			
Comparative Annual Costs (FY14\$M)	ARI vs. FY13	NGB vs. FY13	ARI vs. NGB
<b>Annual Cost Savings</b>	<b>\$906</b>	<b>\$730</b>	<b>\$176*</b>
*\$176M annual O&S cost difference between ARI and NGB Alt due to additional force structure (24 AH-64 BNs vice 20) and training required in NGB plan			

CAPE estimates ARI will result in annual cost savings of \$906M when compared to the FY13 fleet while the NGB alternative would result in \$730M in annual savings. O&S estimates were developed using the Force and Organization Cost Estimating System (FORCES) cost model and by directly applying cost per flight hour factors for each aircraft to each battalion. Institutional training costs were developed using cost and quota data for each training segment (Initial Entry Rotary Wing (IERW), Instructor Pilot Method of Instruction (IPC/MOI), Maintenance Test Pilot (MTP), and Aircraft Qualification (AQC)) at the training base. One-time costs for ARI consist of pilot requalification and second-destination transportation costs as agreed to by both the Army and NGB during the Tiger Team. NGB alternative one-time costs include \$220M for the procurement of 11 remanufactured Apaches required by the additional force structure in the NGB alternative, \$200M for the stretch in the Apache procurement line required by the NGB planned buy profile, and \$150M to procure six RQ-7B Shadow platoons.

As part of the independent cost analysis, CAPE assessed the Army ARI estimate method, sources, and results of \$1.09 billion in annual savings and \$12.12 billion of one-time cost savings and avoidance. As per Senate report direction, the assessment specifically addresses whether the Army included costs required to:

- Procure and maintain additional Lakotas
- Train Army Active Duty and Army National Guard pilots for new missions
- Operate and maintain Apaches and Blackhawks

## CAPE Independent Cost Analysis of ARI and NGB Alternative

The Army estimate includes all of these costs with the exception of those required to procure additional Lakotas. The Army does not include the Lakota procurement costs as it considers Secretary Hagel’s decision to procure 100 Lakotas for the training fleet an external adjustment to ARI based on a request by the National Guard Bureau to keep its 212 Lakotas. While true, the Lakota procurement is now part of the plan and should be included for a full accounting of ARI costs and savings to the Department. Overall, CAPE was able to replicate the methodology and sources for the Army estimated one-time cost savings and avoidance but noted the avoidance estimates are projections based on long term plans outside the Future Years Defense Program (FYDP). A full accounting of the CAPE assessment of the Army estimate is provided below.

### Army Annual Estimate

The Army annual cost estimate consists of Operating and Support (O&S) and Institutional training costs. For each, the FY13 fleet was compared to the FY20 post-ARI fleet. Results of the Army’s annual cost estimate are provided in Table 2.

**Table 2. Army Annual Cost Estimate**

FY14SB <sup>1</sup>	FY13 Fleet Costs	FY20 Fleet Costs	Difference
Operations & Sustainment (O&S)	\$6.72	\$5.50	\$1.23
Lakota O&S <sup>2</sup>	-	\$0.06	(\$0.06)
Institutional Training	\$1.17	\$1.25	(\$0.07)
<b>Total Annual Costs</b>	<b>\$7.89</b>	<b>\$6.80</b>	<b>\$1.09</b>
<b>Aviation Brigades (AC/RC)</b>	<b>13 / 12</b>	<b>10 / 12</b>	<b>3 / 0</b>

Note 1: Costs may not add up due to rounding

Note 2: Original ARI plan replaced legacy training aircraft with National Guard Lakotas. In PB15, Secretary Hagel approved procurement of 100 Lakotas for the training fleet in order to keep 212 Lakotas in the Guard. The Department has subsequently sought \$811M to procure these aircraft. Congress appropriated \$420M in FY15. The Department request for \$391M is currently pending in the PB16 budget request. \$59M represents annual O&S costs for these additional aircraft.

The Army estimated fleet O&S costs by using the FORCES cost model to generate estimates of personnel and Operations and Maintenance (O&M) costs for each Army and Guard Aviation Brigade or Battalion. The estimates assumed 100% authorized manning, equipping, and readiness and Operating Tempo (OPTEMPO) of 12.5 Hours/Crew/Month for Army units and 7.9 Hours/Crew/Month for Guard units. National Guard Additional Flight Training Periods (AFTPs) were calculated using NG Supplement 1 to Army Regulation 95-1 and National Guard Full Time Support (FTS) were calculated using authorizations in accordance with Full Time Support Management Control System FY13 final voucher.

The Army estimated institutional training costs by taking FY13 actual costs for each of the four training sections (IERW, IPC/MOI, MTP, and AQC) at the institutional training base. To estimate FY20 costs, the Army estimated a quota level by aircraft and training type based on ARI plans for fleet inventory and the training pipeline.

**CAPE Assessment of Army Annual Cost Estimate**

Overall, the Army method is valid and includes the costs to operate and maintain all Apaches and Blackhawks as well as the cost to maintain additional Lakotas. CAPE Assessment by cost category:

- Use of FORCES: Army method is valid. FORCES, developed and run by the Assistant Secretary of the Army for Financial Management and Comptroller, is the authoritative model. Tiger Team and independent cost analysis also used FORCES to generate personnel costs.
- OPTEMPO: Army method is valid; estimated Flight Hours/Crew/Month (H/C/M) are consistent with the Program Objective Memorandum FY16 Flying Hour Program training strategy. CAPE used a slightly different method by directly applying cost per flight hour factors to individual crew numbers and H/C/M training strategies.
- AFTPs/MilTechs: Army method is reasonable but assumes that all FTS in Guard Apache units (which have higher levels of FTS than the average unit) will be cut from the Guard top-line; in reality, FTS levels are based on a percentage of end strength. Therefore, there is some risk Army will not fully achieve all \$40M of assumed savings in this category.
- Institutional Training: Army method is valid. FY13 costs reflect historic actuals and FY20 assumptions on quotas and force structures are valid and supportable.

**Army One-time Cost Savings/Avoidance Estimate**

The Army estimates ARI will result in one-time cost savings of \$1.64B and avoidance of \$10.49B, for a total of \$12.12B. In the Army estimate, savings refers to costs within the FY15-19 FYDP; costs outside the FYDP are labeled avoidance. The majority of estimated savings and avoidance are due to the Army contention that the OH-58D Kiowa Warrior armed scout will not need to be replaced as the Apache teamed with Unmanned Aerial Systems (UAS) will fulfill the scout mission. The Army contends the \$811M cost for procurement of 100 Lakota for the training fleet was an external adjustment to the Army’s plan that the National Guard agrees with. As such, the Army does not account for the \$811M as a cost to ARI. Army estimated savings, avoidance, and data sources are presented in Table 3.

**Table 3. Army Estimated Savings and Avoidance**

FY14S'	Army Estimated Savings	Army Estimated Avoidance	Source
FY15-19 OH-58D Cockpit and Sensor Upgrade Program (CASUP)	\$1.46B		OH-58D Procurement and R&D funds
Lakota Flight Hour Offset	\$0.18B		OPTEMPO x Lakota Cost Per Flight Hour
FY20-30 OH-58D CASUP		\$1.90B	FY20-30 CASUP Army Estimate
OH-58D Replacement, Upgrade, or SLEP		\$6.96B	Armed Aerial Scout AoA Estimate
Training Aircraft Upgrade or SLEP		\$0.19B	Program Office Estimate
New Training Aircraft		\$1.43B	Program Office Estimate
<b>Total</b>	<b>\$1.64B</b>	<b>\$10.49B</b>	

Note 1: Costs may not add up due to rounding

### **CAPE Assessment of Army One-time Cost Savings/Avoidance Estimate**

CAPE is generally able to replicate the sources and methodology the Army used to arrive at the \$12.12B in estimated savings and avoidance. However, it is difficult to validate some of the elements as the savings were repurposed and the avoidance estimates are notional and based on long term plans outside the Future Years Defense Program (FYDP). Therefore, we do not assess that all of the estimated savings and avoidance would be attained as proposed.

The Army estimated savings were reduced from the programs named above but used to fund other priorities. The Army repurposed the \$1.46B in OH-58D funds to other programs within the aviation portfolio, mainly for various Manned Unmanned Teaming (MUM-T) upgrades. Similarly, while the Active operating force will not have to operate or maintain the Lakotas, the \$0.18B in O&S costs will be shifted from the operating force to the training fleet vice saved.

The Army defined avoidance as planned costs outside the FYDP no longer required due to ARI. Army avoidance estimates are for systems that are not programs of record and thus they are difficult to fully assess. However, CAPE validated the sources of these estimates and, as these systems were part of the Army's future plans, assuming cost avoidance is reasonable.

Of note, the Army may have faced eventual greater costs for an OH-58D replacement, upgrade, or SLEP. \$6.96B was the estimated cost for a Kiowa Warrior recapitalization with engine, rotor, structural, and transmission enhancements. This was one of the options examined in follow-on analysis to the Armed Aerial Scout (AAS) Analysis of Alternatives (AoA). The AoA Final Report from January 2012 identified two paths forward: pairing recapitalized Kiowa Warrior aircraft with UAS or sustaining the Kiowa Warrior fleet in the near-term while developing and procuring a modified commercial-off-the-shelf solution paired with UAS. It recommended release of an updated Request for Information (RFI) in order to refine the second option as it was not rooted in a formal industry response, modeled, or costed in the AoA report.

CAPE assessed that the analysis for the first path was sound but the second path was likely unaffordable due to the proposed major modifications. Subsequently, the Under Secretary of Defense (Acquisition, Technology, and Logistics) directed the Army to supplement the AoA with further analysis following release of an updated RFI. In December 2012, the Army briefed options to CAPE which ranged from \$3.75B for Kiowa Warrior recapitalization with no performance upgrades to \$10.41B for a new development armed scout. The \$6.96B option was deemed the lowest return on investment and had moderate to high technical and schedule risk. The Army did not submit a final report or recommendation from the additional analysis as required by USD (AT&L) and thus CAPE did not perform a sufficiency assessment. However, as the \$6.96B option fell in the middle of the range and preliminary sufficiency analysis found the cost estimating process valid, CAPE does not take issue with its use but notes it is unlikely the \$6.96B option would have been pursued.

## **Summary**

CAPE estimates that ARI will result in annual cost savings of \$906M when compared to the fleet prior to ARI. The NGB alternative would result in \$730M of annual savings, for a relative difference of \$176M. The Army estimates that ARI will result in annual cost savings of \$1.09B. CAPE refined but generally validated the Army method for annual costs. CAPE was able to replicate the methodology and sources for the Army estimated one-time cost savings and avoidance but noted the avoidance estimates are projections based on long term plans outside the Future Years Defense Program (FYDP). Overall, despite the issues found with the Army method, CAPE estimates ARI will cost less and provide more operational capacity than the NGB alternative.

TAB H - Transparency with the National Guard



### **July – August 2013**

- **TAGs**: Four meetings led by VCSA with ten TAGs to review Army Budget and the Structure changes.
- **NGB**: Involved in Army meetings on resourcing and reductions to include with SecArmy
  - **Aviation Restructure**: Six Army meetings, all with NGB participation on aviation reductions and restructure.
  - **Outcome**: The Army leadership met Congressional intent and dramatically reduced the Active Force (14% based upon 490K force, 26% based upon 570K force), as compared to the Army National Guard (10% based upon 350.2K force, 12% based upon 358K force) and US Army Reserve (10% based upon 205K force); Army also protected Full Time Support in accordance with Guard priorities; the Army also did not follow OSD recommendations to reduce the Army National Guard to 270-290K; in accordance with the input from the National Guard, the Army compromised by equally reducing the US Army Reserve and Army National Guard.

### **September – October 2013**

- **NGB**: Attends Army POM brief to DMAG; submits issue paper to OSD asking review of reductions to Guard.
- **Initial OSD Led Review**: Led by an SES from CAPE, with Joint Staff, NORTHCOM, OSD P&R, OSD Policy, and OSD AT&L representative at the SES/GO (1 and 2 Star level); also represented were the Army and the Guard.
- **Aviation Restructure**: National Guard Bureau embeds a LTC into Army Aviation cell to be a full participant in ARI (15 Sept); additionally, twelve additional ARI planning meetings attended by NGB.

### **November – December 2013**

- **TAGs**: Army G8 briefed TAGs on Aviation Restructure Initiative by VTC; Another ARI brief to TAGs at Arlington Hall; another ARI brief by VCSA to TAGs at National Guard Senior Leaders Conference.
- **NGB**: Chief NGB discussed ARI and reductions at Army 4 Star Conference
- **Two More OSD Led Reviews**: 3 Star Programmers and DepSecDef/VCJCS-led DMAG.
- **Aviation Restructure**: ARI planning conference at Fort Rucker.
- **Outcome**: For Aviation, the Army National Guard stated they wanted to retain their O6-command Aviation Brigades so the Army accommodated the request and protected command billets; SecDef directed that a 50% buyback of ARNG aircraft by directing 100 LUH be procured; this disproportionately reduced Regular Army aviation by 23% of its helicopters and with direction/additional funds from OSD (based upon Army Guard feedback) only reduces Army Guard aviation by 8% (111 helicopters).

### **January – March 2014**

- TAGs: Sent letter to SecDef on ARI and reductions.
- NGB: Presented SecDef with letter from TAGs on ARI and reductions; Army G-3/5/7 ARI Brief to all AC & RC Division Commanders during CSA Senior Leader's Forum.
  - Two More OSD Led Reviews: SecDef personally led a meeting to hear all sides, to include input from TAGs; acting DepSecDef (Dr. Fox) asked a 3-Star SES to lead another multi-week review of the decisions relating to the Army National Guard which confirmed DMAG decision prior to budget rollout.
  - Aviation Restructure: Five more planning meetings and reviews, to include a side-by-side cost comparison.

### **April – June 2014**

- NGB: NGB ARI Update to the USAACE Commander; NGB confirms ARNG conversions and inactivations.
- Aviation Restructure: ARI Sync Session #1 at Ft. Rucker attended by all three Compos.

### **July – September 2014**

- OSD ARI Tiger Team: OSD-CAPE led comparison of ARI to NGB alternative began meeting bi-weekly (10 Executive sessions during 4<sup>th</sup> QTR).
- Aviation Restructure: ARI Sync Session #2 & 3 at Ft. Rucker attended by all three Compos.

### **October – December 2014**

- TAGs: Chief, NGB ARI Presentation to the 54 TAGs. OSD-CAPE "Tiger Team" Outbrief to the Council of Governors and their TAGs.
- NGB: Joint OCLL/DAMO-AV/NGB ARI Update to SASC/HASC PSMs.
- OSD ARI Tiger Team: OSD-CAPE led comparison of ARI to NGB alternative continued (8 Executive sessions in October and November).
- Aviation Restructure: ARI Sync Sessions 4 & 5 at Ft. Rucker attended by all three Compos.

### **January – March 2015**

- NGB: Joint OCLL/DAMO-AV/NGB ARI Update to SASC/HASC PSMs.
- Aviation Restructure: ARI Sync Session 6 was attended by MG Michael Lundy (USAACE Commander), BG Benjamin Adams III (Deputy USAACE Commander – ARNG), and BG Michael E. Bobeck (Special Assistant to the DARNG) at Ft. Rucker, AL. Although their ability to approve a course of action was limited, ARNG personnel agreed to broad plan on "how" aircraft transfers between the components will occur. Sessions 7 & 8 also took place in February and March.

**April 2015 –**

- NGB: HQDA/ARNG Aviation Force Structure Meetings (22 April & 11 May).
- GAO: Published ARI Report with HQDA, OSD, and ARNG input that validated Army ARI planning and analysis (27 April).
- OSD- CAPE: Published independent cost analysis (14 May).
- Aviation Restructure: ARI Sync Sessions 9 & 10 Ft. Rucker attended by all three Compos.
- National Commission: Announced membership of the commission panel and held first hearings (May 18-20).