

## Hoog's Airpower Optimism ... Stillion's "Bigger Airplane" Solution ... Navy Intelligence On PLA Weapons ....

### COME, BUT CASH IN HAND

Just over a year ago, the Air Force was primed to take advantage of an "orderly transition" of the Afghanistan drawdown in order to focus on what Assistant Vice Chief of Staff Lt. Gen. Stephen L. Hoog labeled "the three Rs"—regroup, reset, and retrain. However, Hoog said the "rapid succession" of the Crimea crisis, the ISIS offensive into Iraq, and the Ebola breakout in late summer of 2014 upended these plans. Nevertheless, USAF airmen and allied partners responded to all three events fluidly, Hoog said, and in doing so have solidified airpower's perceived importance to the joint force at a critical time.

"Last year, everyone was ... asking for more Air Force, but with the expectation that the Air Force would bring its own checkbook as well," Hoog, who oversees the day-to-day operations of the Air Staff, said at an April 29 Air Force Association/Mitchell Institute for Aerospace Studies event.



USAF photo by Scott Ash

Focus on building international partnerships, says Lt. Gen. Stephen Hoog.

As the Fiscal 2016 budget plan took shape, "that's changed somewhat," he emphasized. "Everyone's starting to realize ... that American airpower is [simply] vital to the way that we fight and do our nation's business." This conventional wisdom is reflected in the 2016 budget submitted to Congress, Hoog said. "Quite honestly, ... this FY '16 budget that was put forward by the President helped the Air Force in some key areas," such as the nuclear mission and needed investment in core space capabilities. Hoog called it a bit of a "sea change" as far as budgeters realizing what the Air Force is going to need in the years ahead to meet some of its growing requirements.

Still, USAF faces the return of sequestration and a historically low Active Duty force structure of 317,000 airmen. The service will see pressure on both readiness and modernization continue, just as the service attempts to bring many of its combat units back to "C1" and "C2" level readiness for full spectrum conflict.

To help keep the force potent, USAF needs to focus efforts in two key areas, he noted—maximizing the potential contribution of the reserve components and improving international cooperation where it can. Hoog drew attention to USAF efforts to implement proposals from the 2014 National Commission on the Structure of the Air Force, declaring that the Air Force will submit three more assessments to Congress during the next three years over how it will better integrate the Air National Guard and Air Force Reserve into Total Force operations.

With 200,000 fewer airmen on Active Duty today than in 1990 and an operations tempo that continues to rise, "we [need] the strengths of each component to help solve our nation's challenges," Hoog said.

USAF has built a methodology to compare the capability mix between components, and early analysis by the Air Staff shows that only one bin has excess capacity among all three components—the intratheater tactical airlift mission. "Every place else we've looked, we actually have more need than we have capacity," and USAF will be working hard to make trade-offs to get more capability in other mission sets in the coming years.

One of those mission sets is intelligence, surveillance, and reconnaissance. As combatant commanders clamor for more ISR, Hoog sees the Air Guard and Reserve as natural partners in that mission. The Guard and Reserve have leveraged their valuable combat experience in fighters in the remotely piloted aircraft mission, he pointed out. This preserves valuable combat capability in a new aircraft and helps shrink a potentially long training pipeline. "I think you're going to see more of it in the future," Hoog said of the expansion of RPA missions in the Guard and Reserve.

The other piece USAF needs to stay focused on is building long-term relationships with international partners, Hoog said. USAF has 400 cooperation agreements signed with foreign air arms, hosts 1,200 international airmen attending aircrew training in the US, and teaches 325 international students in its Air Force professional military education programs, among other efforts. From exercise cooperation in events such as Red Flag to foreign military sales agreements, many of USAF's partners share political objectives and security concerns with the United States, Hoog said, and these cooperation programs have paid off in interoperability in combat over Iraq and Syria with the broad Operation Inherent Resolve coalition.

### A "BIGGER AIRPLANE" SOLUTION

The Air Force is studying intensely the future air superiority mission, announced service Chief of Staff Gen. Mark A. Welsh III earlier this year. A "capabilities collaboration

team” will tackle the issue of what air dominance should look like in 2030.

Airpower analyst John Stillion released a new study for the Center for Strategic and Budgetary Assessments as USAF moves out on the project. Stillion argues that the air superiority mission—as USAF has known it for decades—may require some radical rethinking to ensure success in the 2030s and beyond.

“The nation is at a point right now where we are beginning to think about what comes after F-35,” Stillion said at a presentation of his study to AFA’s Mitchell Institute in April. “What does sixth generation [air combat] look like?”

In “Trends in Air-to-Air Combat: Implications for Future Air Superiority,” Stillion, a senior fellow at CSBA, says that air combat has changed significantly since the onset of the “missile era” of the 1960s. Superior situational awareness remains the vital element to success in the air, but its importance only will grow as technology and weapons become even more capable and lethal.

From World War I until the missile era, “the airplane was the weapon,” Stillion said, placing great importance on the skill of the pilot to maneuver within visual range to engage with guns and cannons. In this environment, speed and maneuverability were crucial factors in victory. Even in the first years of the missile era, as first generation air-to-air missiles were primarily heat-seeking weapons, pilots needed to properly position their aircraft.

In his study, Stillion researched and documented all confirmed aerial wins in the “missile era” of air combat, from 1965 through 2013, adding up to some 1,467 confirmed victories over fixed wing aircraft in conflicts worldwide.

Over time, an overwhelming trend emerged: As long-range friend or foe identification improves (especially with the advent of the airborne warning and control, or AWACS, aircraft) close-in air combat all but disappears, replaced with kills via long-range air-to-air weapons. Since the end of the Yom Kippur War in 1973, 88 percent of aerial victories have been credited to missiles, with the last gun kill recorded in the Iran-Iraq War in 1988.

Agility’s importance decreases when fighting against beyond-visual-range weapons. Sensors, stealth, and better networks have now become the key ingredients of situational awareness, taking the place of traditional aerial combat attributes such as speed and maneuverability.

Taken together, these trends mean a future air-to-air solution may not look like an F-22. It may call for a “bigger airplane,” having the size and the space to host better sensors, longer range air-to-air weapons, and ability to network with smaller unmanned combat air vehicles. These would serve as “airborne pickets,” providing both firepower and early warning capabilities.

“What you may want [are] bigger sensors, bigger weapons, better network access,” Stillion said, if beyond visual range becomes the prevailing form of aerial combat. A larger aircraft could host more “multiphenomenology” sensors, as future aerial combat will increasingly hinge on maintaining robust data links to let aircraft pass information back and forth.

Stillion admits there are key assumptions to this scenario, and a large warplane would be heavily dependent on the linkages in combat networks to succeed in wartime.

While USAF and the Navy are slated to acquire scores of stealthy and maneuverable fighter aircraft over the next 20 years—and these would be an effective hedge against any countering trend in beyond-visual-range air combat—there is a great deal of evidence that in two decades the “future may be quite different for air superiority,” he said.

## CHINA’S GROWING REACH

As US officials have raised alarm about Chinese military construction projects in the South China Sea, the Office of Naval Intelligence released in early April its first unclassified assessment of China’s naval forces and weapons since 2009. It provides new insight into Chinese efforts to develop anti-access and area-denial weapons.

The detailed 50-page report, entitled “The PLA Navy: New Capabilities and Missions for the 21st Century,” lays out a picture of numerous maturing naval power projection capabilities, an assessment of the People’s Liberation Army (Navy) organization and training efforts, and a wide profile of Chinese equipment and capabilities. Overall, China’s modernization efforts have focused on improving forces and replacing older, outmoded ships and aircraft with modern, multimission platforms and more effective weapons. This gives its navy an “increasing capability to undertake missions far from China.”

Though much of the report discusses the PLAN’s fleet buildup, it contains new intelligence assessments about China’s power projection weapons, such as sea-going air defense and anti-ship missiles. “In recent years, shipboard air defense is arguably the most notable area of improvement on PLA(N) surface ships,” the report states. Newer ships entering service are equipped with medium- to long-range area air defense missiles such as the HHQ-9 surface-to-air, with a range of around 55 nautical miles (63 miles), and the new Luyang III-class destroyer now carries an extended range variant of the HHQ-9, able to range upward of 80 nautical miles (92 miles), according to the ONI assessment. These weapons are controlled and guided with modernized combat systems and air surveillance sensors that allow the PLA(N) to operate “with increased confidence outside of shore-based air defense systems.”

Despite its weapons development programs, China still has to further mature a network of command and control capabilities to give these systems credibility. China is seeking to develop and employ more advanced maritime command, control, computers, communication and intelligence, surveillance, and reconnaissance capabilities.

The ranges of modern anti-ship cruise missiles extend beyond that of a ship’s sensors, and weapons such as the DF-21D Anti-Ship Ballistic Missile (having a range greater than 810 nautical miles or 932 miles) “are even more dependent on remote targeting,” ONI states, and thus must be effectively targeted via air- and sea-based sensors. This is a “formidable challenge” for China, because to track activity in areas such as the South China Sea, it would need to build ISR coverage of an area some 1.5 million square nautical miles (1.9 million square miles) of sea and airspace to include the Philippine Sea. This is one of the reasons China is developing a wide array of sensors on aircraft and at sea, as this network can provide the most detailed and reliable information—but is limited.

China is also investing in long-range radar programs and a growing reconnaissance satellite fleet. Should the requisite C4ISR systems be developed, China will be more able to expand its combat capabilities “further into the Philippine and South China Seas,” the report states.

In the coming decade, provided China’s economic health can bankroll double-digit increases in defense spending, the fielding and introduction of capable carrier aircraft, ballistic missile submarines, and other elements could fundamentally alter how the force “operates and is viewed by the world.”