

Our Nation's Carrier Air Wings

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In 1910 an intrepid young aviator, Eugene Ely, performed the first airplane takeoff from a ship, the USS *Birmingham*. Two months later, in January 1911, Ely made history again by completing the first successful shipboard landing aboard the cruiser, USS *Pennsylvania*. The century-plus that followed has brought about extraordinary developments in the performance, safety and war fighting capability of what is now arguably the premier instrument of America's global influence and striking power – the U.S. Navy's carrier air wings. And through those years the achievements and advancements came at a high price for thousands of pilots and supporting crews – in peacetime, as well as war. It must also be noted that many allies and partners made their own contributions to the evolution of sea-based aviation that was critical to the success of today's carrier air wings.

Today, the carrier air wing is at the very tip of the spear for a Navy that protects our nation from attack and preserves America's strategic influence throughout the world. These Naval forces uniquely provide U.S. leaders credible options that allow them to protect the nation's prosperity, defend its security, assure its allies and partners, and deter its adversaries. The breadth of challenges our nation faces demands a range of naval options. The carrier air wing, in conjunction with the nuclear powered aircraft carrier, consistently proves itself as among the most available, credible and reliable of those options.

In every decade since the historic firsts of Naval Aviation the carrier air wing has been the beneficiary of the Navy's dedication to the technological advancement of its combat capability, all while leading the evolution of the maritime war-fighting domain.

The Nuclear-Powered Aircraft Carrier

You can't talk about the carrier air wing without speaking to the vessel that allows it to operate throughout the world. The reach and effectiveness of the carrier air wing relies, of course, on the capabilities and numbers of the carriers themselves. In the early years of the 21st Century the aircraft carrier continues to be central to maintaining a forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance and disaster response. Today's *Nimitz* and *Ford* class aircraft carriers aren't just the biggest warships in history; they are also the signature platform from which American military power is generated – and in conjunction with the carrier air wing, arguably our country's primary conventional asymmetric military advantage.

The Carrier Air Wing – Present and Future

Since inception the carrier air wing has been able to reinvent itself through evolutionary operating concepts and tactics as new, more capable aircraft and weapons became available. Today's air wing consists of multi-mission strike fighters, electronic attack aircraft, airborne early warning aircraft, and sea combat/anti-submarine helicopters, along with critical logistics enablers. And in the not too distant future we will see increasing numbers of unmanned aircraft as well. The future carrier air wing will require the complementary offensive and defensive capabilities of all the assets within it.

The FA-18E/F Super Hornet continues to receive advanced upgrades required to sustain its technological edge against potential adversaries. As the FA-18A-D Hornets leave the Navy's inventory the F-35C Lightning will make its debut and add to the expanding war-fighting network within the carrier strike group. The EA-18G Growler is advancing the air wing's airborne electronic warfare capability, working in conjunction with the other sensors and shooters within the strike group. The remainder of the wing will closely resemble today's configuration with upgrades to existing systems, including weapons.

Improvements in surveillance and detection are integrated within the E-2D Hawkeye as it replaces the E-2C Hawkeye. An expanded helicopter footprint employs the MH-60R for Strike Group submarine defense and surface surveillance reconnaissance and strike, a role previously filled by the S-3B and SH-60B/F. The MH-60S replaces the CH-46D, SH-60F and HH-60H for search and rescue (SAR, Special Operations Forces (SOF) support, small boat defense as well as filling a logistics role within the Strike Group. The CMV-22B Osprey will recapitalize the Carrier Onboard Delivery logistics mission and enable a flexible sea-based logistics support concept unheard of before. A future unmanned ISR (Intelligence, Surveillance and Reconnaissance) and refueling system, now called the MQ-25A, will enable tanker-configured Super Hornets to reconfigure and focus on their core strike-fighter missions.

In an ever-increasing net-enabled world, where netted weapons, sensors and platforms will be a critical component of the carrier air wing, electronic warfare and cyber capability, will evolve and become a much more important war-fighting capability.

After the Cold War the Navy had the foresight to embrace the value of electronic attack and advanced its capabilities as others "reprioritized" theirs. The Navy's dominance in airborne electronic attack is unsurpassed and will continue to enable and enhance the Navy's war-fighting capability. The carrier-based EA-18G provides capabilities invaluable to both the Navy and the Joint Force in contested environments and will continue to do so far into the future. As with all the air wing aircraft payloads, the Next Generation Jammer employed on the Growler will be a critical asset to the carrier air wing's future success.

Carrier Air Wing Challenges

Over the last decade, Naval Aviation and, specifically, carrier-based Naval Aviation, have been active, conducting combat operations in the Middle East and Central Asia, in addition to stability and presence missions elsewhere around the world. They have supported numerous units on the ground and been available to respond to immediate tasking when requested. Consider that since 9/11 carrier air wing aircraft have flown more than 200,000 combat missions. And during the first 54 days of the campaign against ISIS, combat aircraft from the USS *George H. W. Bush* (CVN 77) provided all of the coalitions' airborne strike capability as land bases were not available.

This continuous support has come at a cost across the air



In the Philippine Sea in June 2016 a combined formation of aircraft from Carrier Air Wings Five and Nine, pass by USS John C. Stennis (CVN 74). Stennis and USS Ronald Reagan (CVN 76), not pictured, were conducting dual aircraft carrier strike group operations in the 7th Fleet in support of security and stability in the Indo-Asia-Pacific region. (Photo by LT Steve Smith)

wing's aircraft. Operations and maintenance support is budgeted based on certain assumptions about use-rates of aircraft and the carrier strike fighters have been used at a much higher rate than was planned and budgeted for. While Overseas Contingency Operations (OCO) funding was supposed to offset the increased utilization in the combat zone, the amount of OCO provided wasn't enough to compensate for the utilization rate increases.

As most budgeters know, a program is rarely fully funded because offsets have to be made to balance budgets across all DoD requirements. As a result, a certain amount of "risk" is assumed. As the budgets are moved forward and approved they haven't completely mitigated the increased utilization.

Every aircraft has a specific design life measured in multiple ways. The most commonly referenced metric is flight hours. In the requirements phase of the aircraft procurement journey the Navy specifies how many flight hours they need from the aircraft they are purchasing. In the case of the Hornets and Super Hornets that number is 6,000. Historically, the planners estimate how many hours per year the average aircraft will be flown and then amortized that to an average number of years the aircraft will be in the inventory. So, in the end, the planners can determine when the replacement aircraft should arrive in the fleet. (As you can surmise there is quite a bit of spreadsheet work done to manage all the inventories.) In the case of the Navy's Hornet, which entered the inventory in the early 1980s, the F-35C is its designated replacement. The challenge facing the Navy's air wings is that the Hornets are 'ageing out' and the F-35C is late in arriving to replace those aircraft.

What now exists in the air wing is a situation in which the Super Hornets are carrying the weight of the operational and training utilization on their shoulders. Because of that fact, the Super Hornets are starting to age-out at a pace ahead of plan and that must be mitigated. As a result, Naval Aviation leadership is confronted with either purchasing new aircraft or remanufacturing existing aircraft...or a combination of both.

While it is commonly held that remanufacturing can solve the short-term inventory challenge, history tells us that a combination of production and remanufacturing is required to address a much longer-term inventory challenge. With the budgetary pressures that exist across the Department of the Navy, the fiscal options are limited for keeping the necessary inventory of strike fighters on the Navy's carriers. Currently, Naval Aviation leadership has found it necessary to keep the Super Hornet line producing while repairing a limited number of Hornets, and putting all the Super Hornets through a Service Life Extension Program (SLEP), in addition to procuring F-35Cs. Having the Super Hornet production line active will also mitigate critical parts availability for the SLEP process.

Summary

We are witness to an evolved 100-year war-fighting capability unmatched today, and very much admired, in our carrier air wings. Naval Aviation has successfully transformed this sea-based capability from an experiment by a daring aviator to a world-influencing technological marvel. Carrier air wings are the very tip of America's spear and prove themselves each and every day. Just as with the Navy's nuclear powered aircraft carrier, the carrier air wings are constantly evolving, bringing on more capability to outpace potential adversaries while providing more effective responses and options for Navy and national leadership. The Navy's carrier air wings put the 'I' in 'Influencing' when it comes to potentially bad actors losing perspective on peaceful global coexistence.

