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AMERICAN CARRIER  
**AIR POWER**  
AT THE DAWN OF A  
NEW CENTURY

**Benjamin S. Lambeth**

**Prepared for the United States Navy**

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## Summary

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The terrorist attacks of September 11, 2001, confronted the Navy, like all of the other U.S. services, with a no-notice call to arms. The sudden demand that they presented for a credible deep-attack capability in the remotest part of Southwest Asia where the United States maintained virtually no access to forward land bases posed an unprecedentedly demanding challenge for naval aviation. Within less than a month after the attacks, the Bush administration and U.S. Central Command (CENTCOM) planned and initiated a campaign to bring down the Taliban theocracy that controlled Afghanistan and that provided safe haven to the terrorist movement that perpetrated the attacks. Code-named Operation Enduring Freedom, that campaign was dominated by air attacks against enemy military assets and personnel, supported by teams of special operations forces (SOF) on the ground working with indigenous Afghan opposition groups to provide U.S. combat aircraft with timely target location, identification, and validation.

Carrier-based Navy and Marine Corps strike fighters operating from stations in the North Arabian Sea substituted almost entirely for Air Force land-based fighter and attack aircraft because of an absence of suitable operating locations close enough to the war zone to make the large-scale use of the latter practicable. Strike missions from the carriers entailed distances to target of 600 nautical miles or more, with an average sortie length of more than four and a half hours. The farthest distance of 750 nautical miles from carrier to targets in

northern Afghanistan made for sorties lasting up to ten hours, often with multiple mission tasking.

In all, from the start of hostilities on October 7, 2001, until the end of major offensive operations on March 16, 2002, six carrier battle groups participated in Enduring Freedom. Together, they conducted around-the-clock operations against enemy forces in a landlocked country more than an hour and a half's flight north of the carrier operating areas in the Arabian Sea. Around 80 percent of the carrier-based strike missions dropped ordnance on targets unknown to the aircrews before launch. Of all Navy munitions dropped, 93 percent were either satellite-aided or laser-guided. Each carrier conducted flight operations for roughly 14–16 hours a day, with overlaps as needed to keep an average of three two-plane sections of fighters constantly over Afghanistan for on-call strikes against emerging targets.

This sustained contribution of naval aviation to the campaign (some 72 percent of all combat sorties flown in Enduring Freedom) showed the ability of as many as four carrier battle groups at a time to maintain a sufficient sortie rate to enable a constant armed airborne presence over a landlocked theater more than 400 nautical miles away from the carriers' operating stations in the North Arabian Sea. In so doing, it roundly disconfirmed suggestions voiced by some critics only a few years before that the Navy's carrier force lacked the capability to turn in such a performance. In conducting combat operations throughout the five-month course of major fighting in Enduring Freedom, the participating air wings showed the substantially improved capability that naval strike aviation had acquired since the 1991 Persian Gulf War. The predominant use of precision munitions made the Afghan air war the most precise naval bombing effort in history up to that time.

If Operation Enduring Freedom had been tailor-made for deep-strike carrier air operations, the U.S.-led war against Saddam Hussein in Iraq that followed a year later was no less so, at least with respect to missions launched from the eastern Mediterranean. By the end of the first week of March 2002, as Operation Iraqi Freedom neared, the Navy had two carriers, USS *Theodore Roosevelt* and *Harry S. Truman*,

on station in the eastern Mediterranean and three more, USS *Kitty Hawk*, *Constellation*, and *Abraham Lincoln*, deployed in the Persian Gulf. In addition, USS *Nimitz* was en route to the Persian Gulf to relieve *Abraham Lincoln*, which had already been on deployment for an unprecedented nine months.

In all, more than 700 U.S. Navy and Marine Corps aircraft participated in Iraqi Freedom. The average flight operations day aboard each carrier was 16 hours for the first 23 days, after which it ramped down to around 13-14 hours. Each air wing averaged 120-130 sorties a day. Flight deck activity often continued without interruption around the clock for long stretches, since strike aircraft and tankers frequently recovered later than planned as a result of repeated requests for close air support (CAS). As in Operation Enduring Freedom, alert strike packages were launched every day as previously undiscovered targets of interest were identified.

The Iraq war set a new record for close Navy involvement in high-level planning and command of joint air operations. At the operational and tactical levels, the six participating carrier air wings were better integrated into the air-tasking process than ever before, with each wing having full-time representatives in CENTCOM's Combined Air Operations Center to ensure that the wings were assigned appropriate missions. The wings also had ready access to a software package aboard ship that automatically searched the complex daily air operations plan for Navy-pertinent sections, eliminating a need for mission planners and aircrews to study the entire document. Closer cooperation in recent years between the Air Force's and Navy's weapons schools yielded major dividends in improved joint-force interoperability, with the two services working together unprecedentedly well in integrating their respective air operations.

Operations Enduring Freedom and Iraqi Freedom both saw a sustained use of carrier-based air power well beyond littoral reaches. As such, they represented something fundamentally new in the use of naval air power. Unlike previous carrier air applications up to and including Desert Storm a decade before, both wars saw an almost exclusive use of precision-guided munitions by Navy fighters, signaling the advent of a new era in which the principal measure of effective-

ness is no longer how many aircraft it takes to neutralize a single target but rather how many aim points can be successfully attacked by a single aircraft. The two wars also saw a pronounced shift from analog to digital network-centric operations, with the Navy's carrier forces increasingly integrated into the digital data stream. In both wars, the performance of the Navy's carrier air wings offered a strong validation of the final maturation of U.S. carrier air power after more than a decade of programmatic setbacks and drift in the wake of the cold war's end.

Before the terrorist attacks of September 11, the Navy's global presence posture had been enabled by a highly routinized sequence of maintenance, training, and unit and ship certification aimed at meeting scheduled deployment dates that were all but carved in stone. The sudden demands levied on the Navy by the terrorist attacks, however, changed that pattern of operations irretrievably. Recognizing that the new demands of an open-ended global war on terror meant a need for more responsive naval forces able to sustain a higher level of readiness, the Chief of Naval Operations (CNO) in March 2003 announced a need for the Navy to develop a new Fleet Response Concept (FRC) aimed at providing an enhanced carrier surge capability.

That initiative was put into effect on the eve of Operation Iraqi Freedom, which offered a timely opportunity to test the concept under fire. As the war neared, the Navy had eight carrier battle groups deployed, including USS *Carl Vinson* in the Western Pacific monitoring North Korea and China during the final countdown. Five of those eight battle groups and air wings had participated in Operation Enduring Freedom just a year before. With five battle groups on station and committed to the impending war, a sixth en route to the war zone as a timely replacement for one of those five, a seventh also forward-deployed and holding in ready reserve, and yet an eighth carrier at sea and available for tasking, a full 80 percent of the Navy's carrier-based striking power was deployed and combat-ready. With that demonstrated performance having validated the FRC proposal, the CNO in the early aftermath of Iraqi Freedom approved it and directed its implementation as the Fleet Response Plan (FRP).

The FRP seeks to increase the efficiency of maintenance and training processes and procedures so as to heighten overall carrier availability and readiness and to increase the carrier force's speed of employment. It envisages the augmentation of deployed carrier battle groups with surgeable battle groups ready for deployment and combatant-commander tasking, thereby yielding increased overall force employability and earlier commitment of carrier striking power. More specifically, it aims to provide combatant commanders with what has come to be characterized as "six-plus-two" ready carrier strike groups (CSGs). The "six" refers to deployable CSGs that can respond almost immediately to tasking, wherever they may be in their respective training schedules, in varying amounts of time up to 30 days. The remaining two represent near-combat-ready CSGs that can deploy as needed on a more accelerated schedule than before, normally within around 90 days. That will constitute a larger overall naval air force complement able to respond to tasking, as opposed to a smaller forward-deployed force fielded primarily to meet "presence" requirements.

With respect to planned force modernization, the Navy's nuclear-powered *Nimitz*-class aircraft carriers have provided the nation with effective service for more than 30 years. The design for those carriers was completed during the 1960s. Since then, the carrier force has not undergone an aggressive effort to fold cutting-edge technology into the design of follow-on platforms. In light of these considerations, and prompted by growing concern that the continued absence of any significant progress in U.S. carrier design was inhibiting operational capability improvements and the incorporation of new technologies, the Navy in 1993 commissioned a future sea-based air platforms working group to explore operational requirements, available systems and technologies, and needed R&D initiatives for defining and developing the next generation of carriers. That initiative eventually resulted in the establishment of the Future Aircraft Carriers (CVX) program.

Largely on the strength of subsequent analytical assessments and findings, the Defense Acquisition Board (DAB) in June 2000 approved the Navy's proposed plan to pursue a follow-on to the

*Nimitz*-class carrier that will be a large-deck, nuclear-powered ship that was then designated CVNX. The DAB's consensus was that large-deck carriers were the preferable alternative for a broad range of reasons having to do with operational effectiveness and flexibility. Once commissioned in 2015, as its current development schedule projects, the first of the Navy's next-generation carriers, now called CVN-21, will feature such radical innovations as an advanced reactor and electrification of all auxiliary systems, which will increase the ship's electrical power-generation capability to three times that of the *Nimitz* design and will also replace steam and hydraulic piping throughout the ship. In addition, four electromagnetic aircraft launch catapults will replace the earlier-generation steam catapults. CVN-21 will have a more efficient flight deck and advanced arresting gear for aircraft recoveries. An abiding hallmark of its many design goals is the provision of an adaptable infrastructure that will allow the incorporation of new capabilities as they develop. These measures will greatly reduce life-cycle costs over the new carrier's planned service life.

Among the many gains that have been registered in the leverage of U.S. carrier air power over the past decade have been a proven ability to surge a large number of CSGs (as many as eight out of 12 carriers and ten air wings) and to keep them on station for the duration of a major campaign; to attack multiple aim points with consistently high accuracy on each combat sortie around the clock irrespective of weather; and—with the help of nonorganic tanking support—conduct deep-strike missions well beyond littoral reaches and remain on station for hours, if need be, in providing on-call interdiction and CAS. These are new capabilities that would have been all but unthinkable during the final years of the cold war, even when the Navy maintained 15 active carrier battle groups.

In the decade ahead, this process of evolutionary improvement in naval strike warfare will continue unfolding in a way that promises revolutionary advances in the potential of U.S. carrier air power. In particular, the immediate years ahead will see a further sharpening of the edge of the F/A-18E/F Super Hornet, a successor generation of naval electronic warfare aircraft in the EA-18G, the introduction of the E-2D Advanced Hawkeye offering significantly increased airborne

surveillance and battle-management capabilities, the Navy's long-overdue acquisition of an all-aspect stealth platform with the pending introduction of the F-35C Joint Strike Fighter, and a leaner yet more efficient and capable carrier air-wing force structure.

The Navy also is evolving from being a platform-centric to a network-centric force. A recent CNO initiative called FORCENet aims to tie together naval, joint, national, and ultimately coalition information grids to achieve an unprecedented level of battlespace awareness and knowledge management at all levels. This initiative will allow improved situation awareness, quicker battle-damage assessment, and real-time target reattack decisionmaking. It also will provide a common operating picture up and down the chain of command, from the most senior leadership all the way into the cockpits of individual shooters at the tactical level.

In sum, Operations Enduring Freedom and Iraqi Freedom showed that the Navy's carriers no longer operate as individual and autonomous air-wing platforms but rather as a surged and massed force capable of generating and sustaining however many consistently effective sorties over time that an air component commander may need to meet his assigned campaign goals. Unlike the relatively short-range sorties flown during the largely demonstrative and punitive strikes launched into Lebanon in 1983 and against Libya in 1986 and in such subsequent contingency responses during the 1990s as Operations Deliberate Force, Desert Fox, and Allied Force, these were multicycle missions that lasted for as long as ten hours and that ranged deep beyond littoral reaches into the heart of Afghanistan and Iraq, the first of which was landlocked in the most remote part of Central Asia.

Today, carrier aviation is not only a natural concomitant of the nation's status as the world's sole surviving superpower, it also is the one outstanding feature that distinguishes the U.S. Navy unequivocally from all other naval forces around the world. The *Nimitz*-class carrier has often been described as four and a half acres of sovereign U.S. territory that can go anywhere the nation's leaders may desire to send it without needing a permission slip. For years, that characterization was dismissed by critics of carrier air power as a mere slogan that

overlooked the fact that a carrier can be in only one place at a time, irrespective of where a need for it might suddenly arise. That criticism may have had merit throughout most of the cold war, when the Navy typically kept only two or three carrier battle groups deployed at any time, while the others and their attached air wings remained at home in various states of maintenance and requalification training that rendered them undeployable on short notice. That is no longer the case, however, in today's world of constant carrier surge capability under the FRP. When U.S. naval aviation celebrates its 100th anniversary in 2011, carrier air power's classic roles and missions will not have changed greatly from those of the 20th century. Yet the nation's carrier strike groups will have taken on a substantial qualitative improvement in their overall combat leverage with the completion of the Super Hornet acquisition, the advent of the EA-18 and F-35C, and the prospective introduction of unmanned surveillance and strike aircraft into the Navy's carrier air-wing complements.