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Book Author(s): Benjamin S. Lambeth

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Introduction

Throughout most of the cold-war years after American combat involvement in Vietnam ended in 1973, the U.S. Navy's aircraft carriers figured most prominently in an offensive sea-control strategy that was directed mainly against Soviet naval forces, including long-range and highly capable shore-based naval air forces, for potential open-ocean (or "blue-water") engagements around the world in case of major war. For lesser contingencies, the principal intended use of the Navy's carrier battle groups was in providing forward "presence" to symbolize American military power and global commitment. When it came to actual force employment, however, U.S. carrier-based aviation was typically used only in occasional one-shot demonstrative applications against targets located in fairly close-in littoral areas, such as the carrier-launched air strikes against Syrian forces in Lebanon in 1983 and Operation El Dorado Canyon against Libya's Moammar Ghaddafi in 1986.

Iraq's sudden and unexpected invasion of Kuwait in August 1990, however, presented American carrier air power not only with its first crisis of the post-cold-war era, but also with a novel set of challenges that amounted to a wake-up call for the Navy as it confronted the unfamiliar demands of an emerging new era. Over the course of the six-week Persian Gulf War that began five and a half months later, the Navy's carrier force found itself obliged to make a multitude of adjustments during that war. Few of the challenges that were levied on naval aviation by that U.S.-led offensive, code-named

Operation Desert Storm, bore much resemblance to the planning assumptions that underlay the Navy's Maritime Strategy that had been created to accommodate a very different set of operational concerns during the early 1980s.

Simply put, Desert Storm in no way resembled the open-ocean showdowns between opposing high-technology forces that the Navy had planned and prepared for throughout the preceding two decades. Instead, it was replete with the sort of challenges that were unique to littoral operations. To begin with, there were no significant enemy surface naval forces or air threat to challenge the Navy's six carrier battle groups that participated in that war. Moreover, throughout the course of the brief campaign and the five-month buildup of forces in the region that preceded it, the Navy did not operate independently, as was its habit throughout most of the cold war, but rather in shared operating areas with the U.S. Air Force and Army. Because of the Navy's lack of a compatible command and control system, the daily Air Tasking Order (ATO) generated by U.S. Central Command's (CENTCOM's) Air Force-dominated Combined Air Operations Center (CAOC) in Saudi Arabia had to be placed aboard two Navy S-3 aircraft in hard copy each day and flown to the participating carriers so that the next day's air-wing flight schedules could be written.

Furthermore, the naval air capabilities that had been fielded and fine-tuned for open-ocean engagements, such as the long-range AIM-54 Phoenix air-to-air missile carried by the F-14 fleet defense fighter, were of little relevance to the allied coalition's combat needs.¹ Navy F-14s were not assigned to the choicest combat air patrol (CAP) stations in Desert Storm because, having been equipped for the less crowded outer air battle in defense of the carrier battle group, they lacked the redundant onboard target recognition systems that CENTCOM's rules of engagement required for the denser and more confused air operations environment over Iraq. As for the Navy's

¹ Edward J. Marolda and Robert J. Schneider, Jr., *Sword and Shield: The United States Navy and the Persian Gulf War*, Annapolis, Md.: Naval Institute Press, 1998, pp. 180–181. See also James A. Winnefeld and Dana J. Johnson, *Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991*, Annapolis, Md.: Naval Institute Press, 1993, p. 115.

other habit patterns and items of equipment developed for open-ocean engagements, such as fire-and-forget Harpoon antiship missiles, level-of-effort ordnance planning, and decentralized command and control, all were, in the words of the former Vice Chairman of the Joint Chiefs of Staff (JCS), Admiral William Owens, “either ruled out by the context of the battle or were ineffective in the confined littoral arena and the environmental complexities of the sea-land interface.”² U.S. naval aviation performed admirably in Desert Storm only because of its inherent professionalism and adaptability, not because its doctrine and weapons complement were appropriate to the situation.

The Navy, however, soon moved out smartly to make the needed readjustments to the emerging post-cold-war era beginning in the early aftermath of the Persian Gulf War. For example, in response to identified shortcomings that were spotlighted by its Desert Storm experience, the Navy substantially upgraded its precision-strike capability by fielding new systems and adding improvements to existing platforms that gave carrier aviation a degree of flexibility that it had lacked throughout Desert Storm. First, it took determined steps to convert its F-14 fleet defense fighter from a single-mission air-to-air platform into a true multimission aircraft through the incorporation of the Air Force–developed LANTIRN infrared targeting system that allowed the aircraft to deliver laser-guided bombs with consistently high accuracy both day and night.³ Starting in 1997, the Navy ultimately modified 222 F-14s to carry the LANTIRN system, giving the aircraft a precision deep-attack capability that put it in the same league as the Air Force’s F-15E Strike Eagle. In the process, the F-14 relinquished much of its former strike escort role and left that to the F/A-18 with the AIM-120 advanced medium-range air-to-air missile (AMRAAM) as the Tomcat was transformed, in effect, into the deep

² Then–Vice Admiral William Owens, USN, “The Quest for Consensus,” *Proceedings*, May 1994, p. 68.

³ LANTIRN is an acronym for low-altitude navigation and targeting infrared for night.

precision-attack A-6 of old with its much-improved LANTIRN targeting capability.

To correct yet another deficiency highlighted by the Desert Storm experience, naval aviation also undertook measures to improve its command, control, and communications arrangements so that it could operate more freely with other joint air assets within the framework of an ATO. Those measures most notably included the gaining of a long-needed ability to receive the daily ATO aboard ship electronically. In addition, the Navy made provisions for a more flexible mix of aircraft in a carrier air wing, which could now be tailored to meet the specific needs of a joint force commander. The new look of naval aviation also featured a closer integration of Navy and Marine Corps air assets that went well beyond the mere “coordination” that had long been the rule hitherto. That initiative resulted in a greater synergy of forces occasioned by physically blending Marine F/A-18 strike-fighter squadrons into Navy carrier air wings as a matter of standard practice.

Finally, there was an emergent Navy acceptance of the value of strategic air campaigns and the idea that naval air forces must be more influential players in them. As Admiral Owens noted as early as 1995, “the issue facing the nation’s naval forces is not whether strategic bombardment theory is absolutely correct; it is how best to contribute to successful strategic bombardment campaigns.”⁴ The Navy leadership freely acknowledged that its shortfall in precision-guided munitions (PGMs) had limited the effectiveness of naval air power in Desert Storm, a gap that it subsequently narrowed through the improvements to the F-14 noted above and by equipping more Navy and Marine Corps F/A-18s with the ability to fire the AGM-84 standoff land attack missile (SLAM) and to drop the satellite-aided GBU-31 2,000 lb joint direct attack munition (JDAM).

Despite these and related readjustments, however, naval aviation was by no means out of the woods just yet. On the contrary, the ending of the cold war, which occurred more or less concurrently

⁴ Admiral William A. Owens, USN (Ret.), *High Seas: The Naval Passage to an Uncharted World*, Annapolis, Md.: Naval Institute Press, 1995, p. 96.

with the successful conclusion of Desert Storm, further accelerated an already ongoing decline in U.S. defense spending, begun late during the Reagan years and continued by the first Bush administration, to a lower level in constant dollars and percentage of gross domestic product than any experienced by the United States since before the outbreak of the Korean War. Emblematic of this emergent trend was the cancellation of the troubled A-12 stealth attack aircraft program in 1991 by then-Secretary of Defense Dick Cheney on grounds of uncontrolled cost escalation and reduced operational need. That aircraft had been intended to replace the venerable A-6 medium bomber and, in the process, to bring the Navy into the stealth era in a major way.

For the Navy, the post-cold-war U.S. force drawdown that ensued included a loss of three out of 15 deployable carrier battle groups and a concomitant decline in the number of authorized strike-capable aircraft by almost half. As the Chief of Naval Operations (CNO) during the early aftermath of that drawdown, Admiral Jay Johnson, described its impact, “if we have a two-carrier presence in the Gulf, it means we have a zero presence somewhere else.”⁵ Granted, part of this force reduction simply reflected the growing obsolescence of certain older aircraft that had been in the Navy’s inventory for more than three decades and were long overdue to be retired. For instance, the workhorse A-6 medium-attack aircraft, the last of which was retired from the fleet in 1997, had been in service with the nation’s carrier force since the early 1960s. Nevertheless, the Navy, like all of the other U.S. armed services, entered the last decade of the 20th century being asked to do ever more with ever less.

As it suffered one major aircraft program cancellation after another during the early and mid-1990s (with the stealthy AX and A/FX going by the boards in close succession after the A-12’s demise), naval aviation also took multiple broadside hits in the increasingly competitive and combative interservice roles and resources arena. One common criticism of carrier air power levied by Air Force proponents during the mid-1990s charged that “for anything other

⁵ Bradley Graham, “U.S. Military Feels Strain of Buildup,” *Washington Post*, February 5, 1998.

than a one-time show-of-force strike . . . a carrier battle group would be badly handicapped in comparison with a wing of B-2s, even if the battle group was on hand and the bomber wing staged initially from the U.S.”⁶ Another pro-Air Force detractor of sea-based air power wrote as recently as 1999 that carrier air effectiveness had been falsely inflated to “mythic proportions” by its most outspoken proponents, particularly with respect to alleged claims that carriers can operate without access to land bases and can “carry out sustained strikes against targets several hundred miles inland.” This critic cited the Navy’s much-heralded Surge 97 exercise’s short-sortie evolution as alleged proof that “targets more than 500 miles from the carrier would prove to be out of reach,” concluding from this that the scenario had “reflected a blue-water, ocean-control legacy” rather than “a realistic littoral scenario.”⁷ As if to bear this charge out, throughout the later post-cold-war years that followed the 1991 Persian Gulf War, the involvement of the Navy’s carrier air wings in such regional contingency responses as Operations Deliberate Force and Allied Force in the Balkans and Operations Southern Watch and Desert Fox over Iraq mainly entailed relatively low-intensity operations conducted within fairly easy reach of their assigned targets.

The dawn of the 21st century, however, heralded the start of a fundamentally new era for U.S. carrier-based aviation. The terrorist attacks against the United States on September 11, 2001, portended a change of major proportions in the long-familiar pattern of U.S. carrier air operations. Those attacks imposed a demand for a credible deep-strike capability in the remotest part of Southwest Asia where the United States maintained virtually no access for forward land-based air operations. That demand presented a new and unique challenge for the nation’s carrier force. Less than a month after the attacks

⁶ Colonel Brian E. Wages, USAF (Ret.), “Circle the Carriers: Why Does ‘Virtual Presence’ Scare the Navy,” *Armed Forces Journal International*, July 1995, p. 28.

⁷ Rebecca Grant, “The Carrier Myth,” *Air Force Magazine*, March 1999, p. 26. The most complete account of this exercise, which freely admits some of the exercise’s necessary artificialities, remains Angelyn Jewell, Maureen A. Wigge, and others, *USS Nimitz and Carrier Air Wing Nine Surge Demonstration*, Alexandria, Va.: Center for Naval Analyses, CRM 97-111.10, April 1998.

perpetrated by Osama bin Laden and his al Qaeda terrorist organization, the nation found itself at war against al Qaeda's main base structure in Afghanistan and against the ruling Taliban theocracy that had provided it safe haven. In that response, code-named Operation Enduring Freedom, 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. In the process, the carrier air wings that deployed to the region generated the vast majority of the strike-fighter sorties that were flown throughout the war.

Barely more than a year later, the Navy's carrier force again played a pivotal role when five battle groups and their embarked air wings took up stations (three in the Arabian Gulf and two in the eastern Mediterranean Sea) in preparation for Operation Iraqi Freedom, which commenced on March 19, 2003. Over the course of that three-week period of major combat, the five carriers—with a sixth en route to the region to replace one, a seventh held in reserve in the Western Pacific, and an eighth also deployed and available for tasking—conducted around-the-clock operations against Saddam Hussein's forces in Iraq. With the support of nonorganic U.S. Air Force and British Royal Air Force (RAF) long-range tankers to provide multiple inflight refuelings, combat aircraft from the two carriers operating in the eastern Mediterranean flew repeated deep-strike missions that entailed durations of as long as ten hours, in some cases.

Both of these major carrier air operations in close succession saw a sustained use of U.S. naval air assets well beyond littoral reaches. As such, they represented something never before experienced in the evolution of American carrier-based air power. In addition, the two wars saw naval aviation more fully represented than ever before throughout CENTCOM's CAOC at Prince Sultan Air Base in Saudi Arabia, which was the nerve center for all air operations in both cases. They also saw naval aviation fully integrated into the joint and combined air operations that largely enabled the successful outcomes in each case.

Unlike past naval air applications up to and including the 1991 Persian Gulf War a decade before, both wars saw an almost exclusive use of precision-guided munitions by Navy strike fighters, signaling the advent of a new era in which the principal measure of effectiveness is now no longer how many aircraft it might take to destroy a single target but rather how many target 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. None of these achievements would have been possible at the height of the cold war, when U.S. naval aviation was configured differently and oriented toward meeting a very different spectrum of challenges. In both wars, the performance of the Navy's carrier battle groups and air wings offered a resounding validation of the final maturation of U.S. carrier-based air power after more than a decade of setbacks and programmatic drift in the wake of the cold war's end.