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## REPLACING BATTLESHIPS WITH AIRCRAFT CARRIERS IN THE PACIFIC IN WORLD WAR II

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*Thomas C. Hone*

This is a case study of operational and tactical innovation in the U.S. Navy during World War II. Its purpose is to erase a myth—the myth that Navy tactical and operational doctrine existing at the time of Pearl Harbor facilitated a straightforward substitution of carriers for the battleship force that had been severely damaged by Japanese carrier aviation on 7 December 1941. That is not what happened. What did happen is much more interesting than a simple substitution of one weapon for another. As Trent Hone put it in 2009, “By early 1943, a new and more effective fleet organization had become available.” This more effective fleet, “built around carrier task forces,” took the operational initiative away from the Japanese and spearheaded the maritime assault against Japan.<sup>1</sup>

This was clearly innovation—something new. But it was not an outright rejection of the past. Instead, it was a mixture of innovation and adaptation, drawing on existing doctrine where that made sense and creating new doctrine where that was called for. The end result was the foundation of the U.S. Navy that is familiar to us today.<sup>2</sup>

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### PRE–WORLD WAR II CARRIER CONCEPTS

In the fall of 1937, then-captain Richmond K. Turner, a member of the faculty of the Naval War College, presented a lecture entitled “The Strategic Employment of the Fleet.” His argument was straightforward: “The chief strategic function of the fleet is the creation of situations that will bring about decisive battle, and under conditions that will ensure the defeat of the enemy.”<sup>3</sup>

Aircraft carriers had an important role to play, especially by raiding enemy forces and bases. As Turner pointed out, raids could “inflict serious damage” on an enemy and “gain important information.” At the same time, carrier raids could “carry the threat of permanency or future repetition.” Turner argued that raids were “a distinct type of operation” and that raiding “occupies a tremendously important place in naval warfare.”<sup>4</sup>

In his 1937 pamphlet “The Employment of Aviation in Naval Warfare,” Turner recognized that the performance of carrier planes had improved and was still improving, which meant that “nothing behind the enemy front is entirely secure from observation and attack.” Improved performance also implied that carrier aircraft could put air bases on land out of commission and achieve “command of the air” *in a region*. War games and exercises that set one carrier against another were misleading. “For us to attain command of the air around a hostile fleet in its own home waters we must not only destroy its carrier decks, but also all the airdromes or land-based aviation in its vicinity.”<sup>5</sup>

What aviation had brought to naval warfare, according to Turner, was not only the ability to strike enemy ships and bases from the sea but, especially, the ability to gain information about the enemy while preventing the enemy from doing the same with regard to friendly forces. But gaining control of the air would not be possible if a fleet’s air units were dispersed or spread among too many missions. As he put it, “We should, as with other means of action, be sure to employ a concentration of enough airplanes to produce the desired effect.”<sup>6</sup>

But how was that concentration to be achieved? Turner admitted that there “seems to be no one best place to locate our carriers to prevent the enemy from destroying them,” and he acknowledged that exercises had demonstrated that carriers were most valuable as offensive weapons.<sup>7</sup> The fleet problems had shown that the side that found and attacked the other side’s carrier or carriers had a great advantage thereafter.<sup>8</sup> But how could carriers best be protected? How could they be supported logistically? It was well understood by combat aviators that more fighter aircraft did not necessarily translate into an automatic advantage in air-to-air combat. Numbers had to be translated into combat power through the use of proper scouting, bombing, and air-to-air combat tactics. The same notion applied to carriers. There were simply not enough carriers before World War II to know how best to maneuver and employ *clusters* of them.<sup>9</sup>

Despite the unknowns associated with aircraft carrier operations, U.S. carrier doctrine was relatively advanced by April 1939, when Vice Admiral Ernest J. King, Commander Aircraft, Battle Force, issued the guidance document “Operations with Carriers.” For example, it defined the primary mission of carrier aircraft as gaining and maintaining “control of the air in the theatre of naval operations. Missions of a defensive nature militate against the accomplishment of this

mission.” If the limited number of carriers went off to conduct a major raid, the battleship force would have to accept the risk.<sup>10</sup>

“Operations with Carriers,” which drew its inferences from the evidence provided by the Navy’s fleet problems, also noted that successful carrier raids against land bases and targets were “practicable.” However, experience in exercises had shown that carriers operating in close support of an amphibious operation “are usually considered important objectives by the enemy and are usually destroyed before the completion of the operations. This follows largely from a lack of strategic mobility” of the carriers.<sup>11</sup> In addition, there was no certain way to know how to position carriers once they were conducting flight operations. To handle aircraft, carriers had to steam into the wind and maintain a constant course until all were launched or taken aboard. That might make them particularly vulnerable to attack by enemy aircraft, submarines, or even surface ships.

Despite the unknowns attached to carrier operations, several things were clear from the prewar fleet problems. First, it was essential for any carrier to get in the first strike against an enemy. That was because carriers under concerted air attack were almost impossible to defend.<sup>12</sup> Second, therefore, it was critical to conduct effective scouting in order to find the enemy’s carriers *first*. Third, carriers did not belong in night surface engagements. As Fleet Tactical Publication 143 (*War Instructions*) of 1934 put it, “Aircraft carriers should endeavor to avoid night action with all types of enemy vessels and should employ every means, speed, guns, and smoke, to assist them in this endeavor.”<sup>13</sup> This meant that carriers would have to operate separate from battleships at night if there were any possibility of a night surface engagement. But how were the movements of these separate forces to be coordinated? Fourth, tying the carriers to an amphibious operation involved very high risk. *Carriers were safest and most effective if they were allowed to roam and to attack—to take, and then stay on, the offensive.*

#### U.S. CARRIER OPERATIONS IN 1942

In 1942, U.S. carriers in the Pacific performed the missions foreseen before the war:

- *Raids.* Strikes were flown on the Marshalls and Gilberts in February and then attacks on Wake and Marcus Islands. Lae and Salamaua were struck on 10 March, and Task Force (TF) 16 carried Army twin-engine bombers to within striking range of Tokyo on 18 April.
- *Ambushes.* The battle of the Coral Sea (4–8 May) was an attempted U.S. Navy carrier ambush of a Japanese carrier force covering an amphibious operation. Midway (3–6 June) was also an American ambush, but of the main Japanese carrier force.<sup>14</sup>

- *Covering invasion forces.* Around Guadalcanal, at the battles of the Eastern Solomons (23–25 August) and Santa Cruz (26–27 October), U.S. and Japanese carrier forces fought with one another and with land-based air units to gain and hold air superiority. U.S. forces sought to hold Henderson Field; the Japanese land and sea forces struggled to take it or permanently close it. Both sides used carrier aviation to cover amphibious operations and raid the enemy's carriers.

There was nothing doctrinally new in these critical battles. As the late Clark Reynolds demonstrated in 1994, Admiral King's strategy in the Pacific was to maintain an aggressive and active "fleet in being" in order to hinder and harass the Japanese.<sup>15</sup> King's direction to Admiral Chester Nimitz to take calculated risks meant that Nimitz and his subordinates would use carrier task forces *at the operational level of war* to raid critical Japanese targets and then retreat. For their part, to forestall future raids, the more numerous Japanese carriers would attempt to destroy the U.S. carriers. That could (and did) set the stage for U.S. ambushes. The battles of the Coral Sea and Midway were tactical ambushes that attained Admiral Nimitz's operational-level goals. "By the middle of July 1942, Admirals King and Nimitz therefore had four carriers . . . with which to defend Hawaii and Australia against Japan's two surviving heavies and three light carriers. The odds were even."<sup>16</sup>

However, defending the U.S. force that had invaded Guadalcanal placed American carrier commanders in the vulnerable position of staying near enough to the amphibious assault to defend it. That was not what the 1939 "Operations with Carriers" had recommended. It was essential for U.S. forces on Guadalcanal to get land-based aviation up and running from Henderson Field so that carriers could roam and raid. The Japanese knew that and therefore used their forces to try to prevent it. So long as Guadalcanal was being contested, U.S. carriers would have to stay near enough to the island to shield it from Japanese attacks; they would have one foot nailed to Guadalcanal, while their opponents could maneuver freely. As a consequence, the U.S. Navy lost two carriers and saw *Enterprise* put out of action for over three months.

Thinking about carrier operations continued even as the battles raged. As John Lundstrom has discovered, Vice Admiral Frank Jack Fletcher put together a concept of optimal carrier tactics in September 1942, and Nimitz passed Fletcher's assessment on to Vice Admiral William F. Halsey, the area commander, who apparently "concurred with most of Fletcher's positions."<sup>17</sup> Nimitz took Fletcher's comments, Halsey's reaction, "and extracts from action reports of the 26 October Santa Cruz battle" and sent them "to all Pacific Fleet aviation type commanders, task force commanders, carrier captains, and others . . . who led carriers in battle."<sup>18</sup> Nimitz invited comments, and he got them.

At about the same time, Rear Admiral Frederick C. Sherman, who had captained *Lexington* at Coral Sea and was now Halsey's subordinate, developed a paper entitled "Principles of Handling Carriers." When he took command of Task Force 16—built around carrier *Enterprise*—on 24 November 1942, he gave his subordinates copies of this paper "with elaboration."<sup>19</sup> By 1 December, according to Sherman, he had a rough draft of a means of using fighters to defend carriers.<sup>20</sup> On 16 December, Sherman learned that he would also get command of the newly repaired *Saratoga*; he wrote, "Now is my chance to operate a two-carrier task force which I have been advocating since the war started over a year ago."<sup>21</sup> On the 18th he noted that it was necessary "for two carrier task forces operating together to shake down if they are to do it efficiently," and on 28 December he told his diary, "Have been drawing up a plan for operating a five-carrier task force. It looks feasible and fine for defense. It is the only way the air groups of 5 carriers can be conducted. I hope to get a chance to try it out."<sup>22</sup>

Sherman would have an uphill struggle. Opinion about the optimal size of carrier task forces was divided among the senior carrier and carrier task force commanders. As the staff history of the fast carrier task force prepared in 1945 by the office of the Deputy Chief of Naval Operations (Air) would point out, Vice Admiral Fletcher disagreed with his subordinate, Captain Arthur C. Davis, who had commanded *Enterprise* in the Eastern Solomons battle. Davis argued that "the joint operation of more than two carrier task forces is too unwieldy. This applies to both the inherent lags in visual communications and the lags and complications in tactical handling." Davis did not think that changes in doctrine and training could eliminate these problems.<sup>23</sup> Fletcher replied, "Our recent experience indicate[s] that three carrier task forces can be handled almost as easily as two; and I feel certain that four could be operated together without too much difficulty."<sup>24</sup>

But Captain Davis, not so optimistic, was particularly concerned about keeping carriers separate when they were being attacked by enemy aircraft. As he said, "it should unquestionably be the exception rather than the rule that carrier task forces operating jointly be less than ten miles apart, and this distance should be of the order of fifteen or twenty miles when action is thought to be imminent." Fletcher countered, "To an attacking air group, it makes little difference whether the carriers are separated by 5 or 20 miles but to the defenders it makes a great deal. By keeping the carriers separated 15–20 miles there is always the danger that the full fighter force may not be brought to bear decisively against the enemy attack as happened at Midway."<sup>25</sup>

After the battle of the Santa Cruz Islands, the still-unresolved debate carried on. Rear Admiral George D. Murray, who had lost *Hornet*, his flagship, to Japanese bomb and torpedo attacks, argued that two-carrier task forces were too slow

to take the offensive when that was imperative. Rear Admiral Thomas C. Kinkaid, who had commanded the *Enterprise* task force, did not agree. His position was that “by having two carriers together one carrier can take care of all routine flying while the other maintains her full striking group spotted and ready to launch on short notice.”<sup>26</sup> As Lundstrom finds, there was no consensus among the carrier and task force commanders, “with opinion almost equally divided between concentration and dispersion.”<sup>27</sup>

### 1943: THINGS CHANGE

A number of ideas, technologies, and significant people came together in the spring of 1943 in a way that would begin to change dramatically first carrier task forces and eventually the Navy.

The people first. Admiral Nimitz was still looking for an assessment of carrier doctrine and tactics based on the experiences of the previous year. Vice Admiral John Towers, the Navy’s senior aviator, was committed to giving it to him. But Towers was not the only senior aviator reviewing what had been learned during carrier operations in 1942. In his diary entry for 20 January 1943, Rear Admiral Sherman had noted that he and Vice Admiral Halsey “agreed perfectly” on carrier tactics. By 15 March 1943, however, Sherman—the champion of maneuvering multiple carriers together in coherent task forces—had received a letter from Halsey “reversing himself on separation of carriers to receive attack.” Sherman regarded Halsey’s revised views as “unsound.”<sup>28</sup> The disagreement between them shows how uncertain the matter was.

As historian Lundstrom notes, “The key problem was coordinating simultaneous flight operations from different carriers.” Sherman and his chief of staff, Captain Herbert S. Duckworth, working with Commander Robert Dixon, *Enterprise*’s air operations officer, organized exercises to show that this could be done—that carriers steaming together could launch and recover aircraft without their air groups interfering with one another.<sup>29</sup> Sherman’s goal was clear—“to create a standardized doctrine so that different carriers could swiftly integrate into a powerful task force.”<sup>30</sup>

What Sherman and Duckworth had to modify were the “Standard Cruising Instructions for Carrier Task Forces” of 1 January 1943. Those instructions assumed that there would usually be no more than two carriers in a task force. With two carriers, one could send up inner air patrols, scouting flights, and—when required—a combat air patrol, while the other carrier’s air group stood ready to launch strikes. The two carriers could rotate between being the “duty carrier” and the strike carrier. The ships in the task force would exercise with the carriers until they could “turn with the duty carrier *without signal*.” The duty carrier, to limit the time it deviated from the task force’s base course owing to turns into the

wind, would “adjust her position . . . in order to reduce separation [from the rest of the task force] to a minimum.”<sup>31</sup>

The instructions also required multiple carriers in a task force to separate “during air attacks or immediately prior thereto,” each carrier taking with it “those cruisers and destroyers that can form screens in the shortest possible time.”<sup>32</sup> This was prewar doctrine, with the addition of lessons learned during the carrier operations of 1942—that is, *adaptation*. It was repeated in Rear Admiral DeWitt C. Ramsey’s “Maneuvering and Fire Doctrine for Carrier Task Forces” of 22 April 1943: “In the event of a threatened attack on a disposition containing two or more carriers it is imperative that carriers separate, each carrier being accompanied by its own screen of ships previously assigned.” Moreover, “each carrier group shall control its own air operations and fighter direction. . . . Distances between carrier groups shall be maintained between five and ten miles insofar as practicable.”<sup>33</sup>

But change—*innovation*—was coming. Events were forcing it. On 1 March 1943, Admiral King’s headquarters issued the second classified “Battle Experience” bulletin, *Solomon Islands Actions, August and September 1942*. It was critical of how screening destroyers assigned to protect carriers from submarine attacks were maneuvering. Once the carrier they were escorting had launched or recovered aircraft, the escorts had been experiencing difficulty taking up the optimal positions for protecting the carrier from submarine torpedo attack, allowing Japanese submarines to penetrate the destroyer screen.<sup>34</sup>

Two weeks later, on 15 March 1943, Admiral King’s staff issued Battle Experience Bulletin No. 3, *Solomon Islands Actions, October 1942*. This classified analysis, with its focus on the battle near the Santa Cruz Islands in October 1942, did not resolve the issue of how to best use the capabilities of multiple carriers in battle. Vice Admiral Halsey, the senior carrier commander, believed that carriers *Enterprise* and *Hornet* had been “too far apart for mutual cooperation and not far enough apart for deception.”<sup>35</sup> As Halsey observed, “due to the wide separation of the carriers communications collapsed and fighter directing failed.”<sup>36</sup> But Towers, by 1943 the type commander for aircraft in the Pacific, argued that “the files of the War College, the [Navy] Department, and the Fleet contain many thousands of pages of discussion of the merits of separation of carriers vs their concentration. . . . I do not believe that an attempt to rehash this controversy can serve any useful purpose here.” Towers favored the accepted tactic—keeping two carriers together until the approach of an air attack and then dispersing them, bringing them back together once the attack was over.<sup>37</sup>

Rear Admiral George Murray, who had commanded TF 17 (*Hornet* and its escorts), supported Vice Admiral Towers: “It is too much to expect that a combat air patrol of one task force can be controlled and coordinated with the same



degree of efficiency by the fighter direction officer of another task force. The teamwork between the fighter direction officer and his own combat air patrol is such an intimate one, because of constantly working together, much of the efficiency of this combination is lost when the fighter direction is taken over by an entirely separate organization.”<sup>38</sup> However, Osborne B. Hardison, the captain of *Enterprise*, took a different view, insisting that “*what is urgently needed is a sound doctrine.*” At Santa Cruz, on 26 October, the fighter direction team on *Enterprise* had done what they had been trained to do, but their best effort had been overcome by events: “With some 38 of our fighters in the air, and with enemy planes in large numbers coming in from various directions and altitudes, and with friendly planes complicating the situation, then the system breaks down.”<sup>39</sup>

Something had to be done to resolve this months-long debate. The “something” was an idea developed before World War II—“extensive trials and experiments.” Rear Admiral Sherman and Captain Duckworth arrived at Pearl Harbor with *Enterprise* and found the new large carrier *Essex* (CV 9) there, soon to be followed by sister ships *Yorktown* (CV 10) and *Lexington* (CV 16). At about the same time, three new *Independence*-class light carriers reached Pearl Harbor. Sherman and Duckworth, watched by Towers, at last had enough ships and planes to run experiments. The ships themselves had some new technology: four-channel very-high-frequency (VHF) radios for the fighter-direction teams, position-plan-indicator radar scopes for the new SK (air search) radars, a methodology for using the newly developed combat information centers (CICs), and an understanding of how to use the SG (surface search) radar to facilitate safe maneuvering at night and in thick weather. There was also the new fighter, the F6F Hellcat, and information: friend or foe (IFF) transponders for all aircraft.<sup>40</sup>

The results of their experiments were fed into a team of three officers that had been created by Admiral Nimitz on 13 April 1943 to rewrite the “Standard Cruising Instructions for Carrier Task Forces.” One of the three was Captain Apollo Soucek, who had been executive officer of *Hornet* at Santa Cruz. With his colleagues, Soucek decided that they would—as their letter of 18 May to Admiral Nimitz put it—exceed their “instructions to the extent that all existing Pacific Fleet Tactical Bulletins and numerous Fleet confidential letters” needed to be overhauled. The result of their labors was *Pacific Fleet Tactical Orders and Doctrine*, known as PAC-10.<sup>41</sup>

PAC-10 was a dramatic innovation. It combined existing tactical publications, tactical bulletins, task force instructions, and battle organization doctrine into one doctrinal publication that applied to the whole fleet. Its goal was to make it “possible for forces composed of diverse types, and indoctrinated under different task force commanders, to join at sea on short notice for concerted action against the enemy without interchanging a mass of special instructions.”<sup>42</sup> PAC-10’s

instructions covered one-carrier and multicarrier task forces, and escort- or light-carrier support operations of amphibious assaults. It established the basic framework for the four-carrier task forces—with two *Essex*-class ships and two of the *Independence* class—that would form the primary mobile striking arm of the Pacific Fleet.<sup>43</sup> However, it did this within the structure of a combined naval force, a force composed of surface ships—including battleships and carriers.<sup>44</sup>

PAC-10 dealt with the issue of whether to concentrate or separate carriers under air attack by redefining the problem: “Whether a task force containing two or more carriers should separate into distinct groups . . . or remain tactically concentrated . . . may be largely dependent on circumstances peculiar to the immediate situation. No single rule can be formulated to fit all contingencies.”<sup>45</sup> That is, it basically said that the problem was not to develop hard and fast doctrine that would cover *all* situations but to create guidance that could be tailored to the situation at hand. PAC-10 also took advantage of the fact that fighter-direction technology and techniques had matured. It was now possible for a fighter director to maintain a continuous plot of all detected aircraft, evaluate plots and warn friendly ships of “impending air attack,” control “the number and disposition of combat patrols,” take best advantage of the radar technology then being installed on all the large carriers, and direct “the interception of enemy aircraft.” All new air units were to be trained for participation in air defense of a carrier under the direction of fighter directors. As PAC-10 put it, “with the composition of Task Forces rapidly changing, it is essential that a new air unit be able to join a force and assume its duties without receiving a mass of new instructions which are inconsistent with prescribed practice.”<sup>46</sup>

PAC-10 solved two problems. First, “the creation of a single, common doctrine allowed ships to be interchanged between task groups.” Second, “shifting the development of small-unit tactical doctrine to the fleet level and out of the hands of individual commanders increased the effectiveness of all units, particularly the fast-moving carrier task forces.”<sup>47</sup> Put another way, PAC-10 was what Admiral Nimitz had wanted for almost a year. It allowed him to hand to Vice Admiral Raymond Spruance a force that the latter could wield as he wished—with “lightning speed,” speed that he could use to take the Japanese by surprise and keep them off balance *operationally* as well as tactically.<sup>48</sup>

### 1943: PUTTING THE CHANGE TO WORK

The title of Battle Experience Bulletin No. 13, the description and analysis of the attack on Wake Island on 5–6 October 1943, gives the game away: *Dress Rehearsal for Future Operations*.<sup>49</sup> That was it—the initiation in combat of the new combined (and carrier-led) task force based on PAC-10. The new force had been given its first test in the 31 August 1943 raid on Marcus Island, when *Essex*,

*Yorktown*, and light carrier *Independence* combined their air groups, but the sustained attack on Wake was proof that the transformed force could take the offensive against Japanese land-based naval aviation and its torpedo-carrying night-attack aircraft.

Why Marcus and Wake? Neither raid would telegraph the coming amphibious operation against the Gilberts, and Marcus was far enough away from the Marianas to give the new carriers the chance to strike and withdraw to assess their “lessons learned” without having a major Japanese carrier force to contend with. The surviving planning documents give great credit to the ability of Japanese sea-based and land-based aviation to initiate and respond to attack. Wake was therefore the critical test, because it was in range of Japanese land-based naval aviation. Wake was only 537 miles from Eniwetok, 594 miles from Kwajalein, and 640 miles from Wotje, all of which were thought to hold major land-based (and long-range) air components. Wake was also just over two thousand miles from Pearl Harbor. Once committed to attack Wake, the U.S. carrier force could not easily or quickly withdraw to safer waters.

The carrier commander for the Wake raid was Rear Admiral Alfred E. Montgomery. There were three carrier elements of his task group: one built around *Essex* and *Yorktown*, a second based on *Lexington* and light carrier *Cowpens*, and a third based on light carriers *Independence* and *Belleau Wood*. There were also two bombardment groups, composed of cruisers and destroyers, and a task unit composed of fleet oilers. Montgomery had at his disposal a combined force of surface, aviation, and logistics task units, as well as the support of patrol planes based on Midway Island.<sup>50</sup> The aircraft from the carriers began their air assault by gaining air superiority over Wake. As Rear Admiral Montgomery put it in his report, “Well before noon 27 fighters had been shot down and all air opposition appeared to be ended.”<sup>51</sup> Moreover, the fighters flying from *Independence* and *Belleau Wood* successfully protected both the carriers and the surface ships bombarding Wake from long-range bomber attacks. The patrols from these carriers were so successful that Montgomery could claim that “no ship of this force was ever attacked by enemy air.”<sup>52</sup>

Though the raid was a complete success, not everything worked well. Charts of the area around Wake were not adequate, for example. The VHF circuits became saturated because of inadequate radio discipline, and there were problems coordinating the movement of surface ships and the stationing of fighters to protect them. But carrier night fighters had turned out to be a success, as had the use of flight deck catapults on all the carriers.<sup>53</sup> The utility of PAC-10 was affirmed. So was the value of having combat information centers *on all ships*, including surface ships covered by patrolling aircraft.<sup>54</sup>

Lundstrom quotes Captain Duckworth as saying that the essential tactical lessons for using multiple carriers had been demonstrated in 1942 and that “all we did was apply them in the summer & fall of 1943.”<sup>55</sup> But two other often-mentioned developments were essential if multicarrier U.S. task forces were to raid far and wide across the Central Pacific. The first was the growing size and sophistication of Vice Admiral William L. Calhoun’s Hawaii-based Service Force, which kept the carriers and their escorts supplied with fuel and ordnance and provided maintenance at forward anchorages. The second was the growing industrial capacity of the Pearl Harbor Navy Yard. The yard’s ability to repair ships damaged in battle is well documented, but the yard was also able to make sure that new ships could get their defects corrected *before* they went to combat. For example, between 21 and 30 October 1943, *Yorktown* was docked so that its SC-2 radar antenna could be repaired. The flight deck catapults on the light carriers also needed to be inspected and repaired, and there were other “fixes” required for equipment problems on the big carriers *Bunker Hill* and *Lexington*.<sup>56</sup>

The basic issue was whether and how the whole carrier force could successfully support the planned offensive in the Central Pacific. Could the fast carriers raid widely, keeping the Japanese on the defensive, while the escort carriers supported the amphibious forces? Or would the new carriers have to do what Vice Admiral Fletcher had been compelled to do in the Guadalcanal campaign—stay tied to the amphibious assaults? To make matters even more uncertain, it was not clear how, when, and in what manner the enemy would respond to the initial American moves. If the Pacific Fleet went after the Gilberts, would the Imperial Japanese Navy’s carrier and battleship forces sortie from Truk to engage it? Admirals Spruance and Towers both considered that a realistic option for the Japanese, though they disagreed about how best to deal with it. Towers apparently wanted to take the initiative and use the fast carrier force to strike the Japanese at Truk *before* they could gather their forces for a fleet engagement.<sup>57</sup>

More generally, was Spruance’s Central Pacific Force (later the Fifth Fleet) ready for its mission? Could the amphibious force, the land-based air arm, the fast carriers, and the surface ships acting as fire support for the assault troops work together effectively? Where the raids on Marcus and Wake had tested the fast carriers, the assault on the Gilberts would test the whole force. The memory of the Guadalcanal campaign influenced planning for the Gilberts invasion, but as John Lundstrom points out, the offensive power of U.S. forces—especially the carrier forces—had improved dramatically in one year. Rear Admiral Charles A. Pownall’s six *Essex*-class carriers and five *Independence*-class light carriers fielded almost seven hundred aircraft, and eight new escort carriers had among them just over two hundred planes. Vice Admiral Fletcher, by contrast, had commanded only 234 carrier aircraft while defending Guadalcanal in 1942.<sup>58</sup>

The assault on the Gilbert Islands was a success. Even the weather cooperated. An “east-southeasterly wind of 12–15 knots . . . greatly facilitated our carrier air operations; reduced by one half the fuel expenditure of the carrier task groups . . . and so permitted us to build up a fuel reserve that removed any concern over shortage of fuel.”<sup>59</sup> Though the “forces destined for the operation were widely dispersed at the beginning of the assembly and training period,” they were trained and brought together in time to conduct the operation.<sup>60</sup> The commander of the force that assaulted Tarawa, Rear Admiral Harry W. Hill, complimented the performance of the carrier striking groups and especially praised the performance of the escort carriers, which had supported the ground forces.<sup>61</sup> Vice Admiral Towers echoed this praise, adding that “for the first time in history Carrier Night Fighters, operating from a Carrier at sea, were successfully employed against our enemy.”<sup>62</sup>

Towers, Rear Admiral Arthur W. Radford, and others had argued long and hard against the plan to use the carriers as a shield against Japanese attacks from the Marshalls directed against the amphibious units attacking and occupying the Gilberts. Towers wanted to strike by surprise the Japanese airfields in the Marshalls before the invasion and then continue to strike them. As it happened, the carrier task forces were surprisingly good at combining antiaircraft fire and radical maneuvers to blunt the Japanese night attacks by torpedo-carrying aircraft.<sup>63</sup> These measures, combined with night-fighter defense, meant that the fast carriers could protect themselves from the tactic that was the basis of Japanese night anticarrier doctrine. Put another way, the weaknesses in carrier defensive measures revealed initially during the raid on Wake were being steadily overcome.

The fast carrier task force had largely proved itself by the end of 1943. The elements of the force, which included powerful surface escorts, could disperse to raid Japanese bases and then concentrate to shield the amphibious units that were taking away the land bases that the Japanese needed to maintain an effective defense. For example, on 5 November, before the amphibious assault on the Gilberts (to begin on 20 November 1943), Rear Admiral Sherman’s two-carrier task force struck the Japanese base at Rabaul, in the Bismarck Archipelago. Then Sherman’s force was joined by Rear Admiral Montgomery’s three carriers from Spruance’s Central Pacific Force to strike Rabaul yet again, on 11 November. After that mission, both task forces hightailed it for the Gilberts, arriving in time to support the amphibious assaults as scheduled. Once the Gilberts had been secured, the carriers of Rear Admiral Pownall’s Task Force 50 attacked Wotje and Kwajalein, in the Marshalls, and then Nauru, west of the Gilberts. The improved defenses of carrier task forces and the ability of different carrier air groups to coordinate their strikes meant that “it was possible to disperse [carrier task forces] and strike multiple targets simultaneously.”<sup>64</sup>

#### MORE PROGRESS IN 1944

The successful campaign against the Marshalls showed that the new fleet design, centered around carrier task forces but including battleships, cruisers, and destroyers, was a success. The mobility of the carrier task forces, coupled with the ability of the amphibious forces to make landings “over widely scattered areas,” kept the Japanese from “mounting a successful defense at any one place” and prevented effective coordination of their land-based defenses and their seaborne forces.<sup>65</sup> As the U.S. Navy moved forward, it created bases for many squadrons of land-based long-range Army and Navy bombers, and those aircraft mounted further and frequent attacks on Japanese installations.

The U.S. Navy’s carrier task forces increased the tempo of their raids after the conquest of the Gilberts. The fast carrier task force (TF 50), composed of six *Essex*-class and six *Independence*-class carriers and commanded by Rear Admiral Marc A. Mitscher, gained control of the air over Kwajalein and Majuro on 29 January 1944, bombarded Wotje and Taroa, and covered the assaults on Roi and Namur on 1 February. On 16–17 February, TF 50 raided the main Japanese base at Truk, thereafter covering the U.S. amphibious assault on Eniwetok. On 21 February, as part of an effort to squelch Japanese air attacks staged from bases in the Marianas, the newly designated Task Force 58, under Rear Admiral Mitscher, began attacking Japanese air bases on Saipan, Tinian, Rota, and Guam.<sup>66</sup>

Task Force 58 was created to concentrate “the main combatant strength of the U.S. Pacific Fleet in fast carriers, fast battleships, cruisers, and destroyers,” in order to “guard against any attempt by the Japanese Fleet” to disrupt U.S. amphibious operations.<sup>67</sup> At the same time, the elements of this task force, in cooperation with land-based aircraft flying from the Gilberts, were used to neutralize enemy bases. According to Admiral King’s staff, “This program was actually carried out to the letter, and was completely successful.”<sup>68</sup> Put another way, Task Force 58 was both sword and shield.

The planning for the Marshalls campaign also accounted for the possibility of a major fleet action. In case the Japanese battleships appeared, “the plan called for all battleships and cruisers (except some [antiaircraft cruisers] and some of the destroyers) from both the Carrier Force and from the Joint Expeditionary Force to form the battle line directly under Admiral Spruance.”<sup>69</sup> The adoption of PAC-10 had made this possible, and the plan for the Marshalls campaign shows the effects of PAC-10’s implementation. Task Force 58, for instance, “comprised actually all the new battleship strength of the Pacific Fleet, plus a considerable part of the cruiser and destroyer strength.”<sup>70</sup> Yet the plan assumed that the battleships and cruisers could be pulled out of TF 58 in short order and used as a coherent surface force against a similar force of Japanese ships. *Such a dramatic tactical change had not been possible in 1942.*

The new Pacific Fleet matured in the Marshalls campaign for a number of reasons. First, the doctrine in PAC-10 facilitated effective tactical cooperation among combatants and task forces. Second, Admiral Nimitz had restructured his headquarters in the fall of 1943 to provide his subordinate commanders with accurate and useful intelligence on the Japanese. The creation of the Joint Intelligence Center Pacific Ocean Area (JICPOA) had “ended the dispute between [Washington] D.C.–based intelligence activities and those at Pearl Harbor.”<sup>71</sup> Nimitz’s staff also revised the way that intelligence (including signals intelligence) would flow to the operations planners. By the time that planning for the Marshalls operation was under way, Vice Admiral Spruance’s staff could request and expect to receive accurate and detailed information about Japanese forces and their bases.<sup>72</sup>

Third, Vice Admiral Calhoun’s Service Force had gained the ships and the skills necessary to sustain the rapid offensive in the Central Pacific. Calhoun’s command had created and deployed Service Squadron 10, which anchored in the lagoon at Majuro after Admiral Turner’s amphibious force had captured Kwajalein in January. Service Squadron 10 was at the end of a long logistics “pipeline” that delivered ammunition, food, and replacement aircraft from the continental United States to Hawaii and other bases and then to the carrier task forces at sea.<sup>73</sup> Service Squadron 8 was the mobile source of oil and aviation gasoline. Together, the mobile service squadrons gave the fast carrier task force an extraordinary mobility—a mobility that in 1944 allowed the Pacific Fleet to combine its Central Pacific offensive with General Douglas MacArthur’s South Pacific drive toward the Philippines from New Guinea.

The records of operations in the winter of 1943–44 also indicate a growing sophistication in air operations planning. For example, plans for strikes against carriers in 1942 had stressed coordinating the attacks of torpedo and dive-bomber squadrons so that a “pulse” of combat power arrived over the target, dividing and saturating the enemy carrier’s defenses. This was difficult to do; U.S. carrier aircraft did not do it at Midway, for example. However, by the time that Task Force 58 task groups attacked Jaluit and Truk in February 1944, the emphasis was on “a continuous flow of striking groups into the target area, preceded by an initial fighter strike each morning.”<sup>74</sup> Given the mission, which was raiding defended Japanese bases, this stress on the effective flow of aircraft delivering ordnance was sound. So too was the concern for night torpedo attacks by Japanese aircraft. Night fighters were available to counter these Japanese night attacks, but the decision to use these aircraft was left to the task group commanders. As annex C of the operations plan for these raids noted, it was hazardous to recover the fighters at night and dangerous to steam steadily into the wind with Japanese

night-fighting forces (which included submarines and surface ships, as well as twin-engine bombers) in the vicinity.<sup>75</sup>

In May 1944, Vice Admiral Mitscher issued special task force instructions (known as FastCar TFI-1), noting that they followed but did not replace the direction provided by the instruction USF-10(A), which was the U.S. Fleet version of PAC-10.<sup>76</sup> FastCar TFI-1 was based on the assumption that for the immediate future, multicarrier operations would consist of “heavy carrier raids on major enemy bases . . . and heavy raids on enemy bases and areas followed immediately by assault and occupation by Amphibious forces.”<sup>77</sup> The pattern for these raids had been tested and found reliable: “After complete control of the air is attained, then strike aircraft are used to support the actual assault operations. . . . In either of the above cases, the Task Force Air Plan provides for the coordination of the many attacking groups in order to obtain a maximum delivery of strikes on the primary objectives in an orderly and continuous flow. This can best be accomplished by roughly dividing the air groups in half and launching ‘deck loads’ at a time, each ‘deck load’ a complete striking group.”<sup>78</sup>

TFI-1 also dealt with the risk taken by task groups (which together made up the task force) when they separated in order to launch and recover strikes. Because they would often lose direct communication with each other when they separated, doctrine did not have the task force commander always act as the Force Fighter Director, and therefore it was essential that each task group have an effective fighter-director staff. As TFI-1 put it, “Unless otherwise directed by the Task Force Commander, each Task Group will assume independent control for fighter direction purposes.” This doctrine would not work, however, unless each fighter-direction team maintained a continuous plot of *all* friendly aircraft. Otherwise, friendly fighters from one task group would likely engage friendly fighters from other task groups.<sup>79</sup>

With the Marshalls secured, the Marianas were next, and Admiral Spruance, the commander of the attacking U.S. forces, had to assume that the Japanese might seek a decisive fleet engagement after first wearing down his carrier aviation. At the same time, Spruance’s carrier forces had to shield the amphibious assault from any Japanese “end run” against it. In what came to be called the battle of the Philippine Sea, Admiral Spruance therefore chose to shield the amphibious force—despite the argument by Vice Admiral Mitscher that U.S. carriers could destroy the Japanese carrier force and, *in so doing*, best shield the amphibious units assaulting Saipan. Spruance was to be criticized for not doing what Mitscher advised, but his decision was consistent with his concept of the Central Pacific campaign as a series of amphibious assaults that would move U.S. land-based aviation close enough to the Japanese home islands to begin long-range bombing.



What is more interesting is Operation Plan 14-44 of 1 August 1944, Admiral Halsey's scheme to assault Peleliu, in the Palau Islands. The immediate objective was to begin the process of isolating the Philippines in anticipation of their eventual conquest. But the operations plan made it clear that Halsey's planners hoped that the Japanese fleet would come out to fight: "In case opportunity for the destruction of a major portion of the enemy fleet offers or can be created, such destruction will become the primary task."<sup>80</sup> Annex A ("Battle Concepts") to 14-44 assumed that the Japanese would in fact attack, that Japanese "carrier strikes in force may be expected but the enemy is not likely to close for decisive surface action unless he has been successful in inflicting heavy damage by air strikes on our forces." Annex A also assumed that "our fast carrier forces will have had time to complete their initial bombardment missions and are substantially intact prior to an enemy threat developing but may not have had time for completion of refueling and replenishment."<sup>81</sup>

The plan outlined in annex A had Mitscher's fast carrier task force (TF 38) "seek out the enemy and launch a concentrated air strike against his major units." For this to be most effective, the carriers were to "be maneuvered in such a manner as to permit the simultaneous launching by all groups present of the maximum air strike against the enemy at the earliest daylight period to insure completion prior dark." Mitscher would command this operation if it took place.<sup>82</sup> If there were a major daylight surface engagement, Vice Admiral Willis A. Lee's Task Force 34, the "Heavy Surface Striking Force," would attack the Japanese.<sup>83</sup> If the Japanese chose to attack at night, as their surface forces had done at Guadalcanal, Lee's TF 34 would engage them. If they tried to reinforce Peleliu with "Tokyo Express" runs by destroyers and light cruisers, then TF 35, a force of cruisers and destroyers under Rear Admiral Walden L. Ainsworth, would intercept them.<sup>84</sup> What is important about this operation plan is that it was a whole-force plan. It followed the injunction of PAC-10 to bring all available combat power to bear on the enemy, using forces that shared a common tactical doctrine.

Halsey's focus on bringing the Japanese fleet to a dramatic engagement was just as clear in Battle Plan No. 1-44 of 9 September 1944—the plan in place for the battle of Leyte Gulf. That plan assumed that the Japanese fleet "or a major portion thereof is at sea and there is possibility of creating an opportunity to engage it decisively." As Halsey directed, the Third Fleet "will seek the enemy and attempt to bring about a decisive engagement if he undertakes operations beyond close support of superior land based air forces."<sup>85</sup> The "optimum plan," for Halsey, was to strike the Japanese with both his aviation and surface forces, and he was willing to withdraw the amphibious units in order to fight his desired decisive engagement.<sup>86</sup> As annex A to Third Fleet's plan 1-44 put it, "The plan for coordinated use of forces does not discourage use of carrier strikes if enemy is

found within range of aircraft. Particular effort, however, will be made to gain a position from which a predawn carrier strike may be launched concurrently with release [*sic*] of fast heavy striking force from a favorable attack position.”<sup>87</sup>

The image of Admiral Halsey’s fleet that is contained in his September 1944 battle plan is that of a combined force—not a carrier force but a combined force. The mission of that combined force was the same in 1944 as it had been in the many operational-level war games conducted at the Naval War College in the two decades before World War II—to bring the Japanese fleet to decisive battle and defeat it. Though the “long-awaited clash of battle lines never occurred,” the fast battleships “were an essential element of the Navy’s plan for decisive battle and therefore collectively an essential part of the campaign.”<sup>88</sup> Put another way, what took place during the war was not a simple substitution of carriers for battleships but the creation of a modern, combined-arms fleet, one that included submarines and land-based aviation. *That was the innovation.*

#### INTEGRATION TO FORM A NEW ORGANIZATION

The first argument of this article—the one to which most of the article has been dedicated—is that what Navy officers developed in the Pacific in World War II was not a carrier force but a *combined* force. Indeed, all the elements of this force grew in sophistication during the war and because of the war. Before the war, for example, carriers were hit-and-run weapons—raiders. This was not a trivial role, as Navy officers recognized, and it remained a central mission of carriers all through the war. But before 1944 there were hardly enough carrier aircraft for naval officers to become adept at planning and staging mass air attacks, especially against land targets. Shielding amphibious forces was perceived before World War II as a dangerous mission for carriers. But by 1944—certainly by the time Admiral Halsey’s planners were preparing the assault on Peleliu—the Pacific Fleet’s air forces were prepared both for a carrier battle and for protecting an amphibious assault.

By 1944, the Navy’s fast carrier task forces were a major operational-level weapon. *Combined with surface escorts and sustained by mobile service and supply units*, carrier task forces could roam widely and gain air superiority over large areas. The carrier task forces were therefore put to work sustaining the amphibious offensive against Japan in the Central Pacific. The purpose of the Central Pacific campaign was to put land-based, long-range bombers in range of Japanese cities and simultaneously to force the Japanese fleet to devote its resources to defending against the wide-ranging U.S. carrier task forces—instead of defending against the effective submarine offensive against Japanese shipping. In the process, the Pacific Fleet’s air and surface striking units destroyed or immobilized the striking power of the Japanese fleet.

The second argument of this article is that the *total* force created under Admiral Nimitz was the basis of the modern Navy. Under Nimitz, the total, combined fleet was created and successfully used. But also under Nimitz, the Pacific Fleet created a modern support “infrastructure”—the intelligence, logistics, maintenance, and planning organizations so essential to the operation of a highly mobile and powerful forward-deployed striking force. The two developments went hand in hand. Halsey’s Battle Plan No. 1-44, for example, could not have been feasible without the intelligence, planning, communications, and logistics support developed under Nimitz’s leadership. Similarly, all of Nimitz’s efforts to create a fleet-support infrastructure would have been of little use if the Navy had not had the talents of several superb (though not faultless) operational commanders.

Fleet officers also created PAC-10, a doctrine that pulled together the fleet as it had never been united before. Yet PAC-10 did not freeze tactical and operational-level thinking—quite the reverse. PAC-10 did what doctrine should do, which is to give a force tactical cohesion so that it has energy to spare for dealing with the inevitable unexpected challenges. One such challenge emerged in late 1944—the kamikaze, which was in effect a manned missile.

I do not believe that the historians of the changes in the Pacific Fleet during World War II have captured this insight. There are good biographies of Nimitz, Mitscher, Spruance, Towers, and Fletcher. But often the biographers have been participants in the inevitable disputes that preoccupied and sometimes divided the top commanders themselves. Thomas Buell, for example, defended Spruance; Clark Reynolds defended Towers; E. B. Potter (and Samuel Eliot Morison) admired Nimitz; and Lundstrom carefully investigated Fletcher’s actions during the war to amend what Lundstrom thought had been unfair criticisms. Though interesting, useful, and sometimes extraordinary research efforts, their biographies have distracted students of naval warfare from what really mattered, which was the creation of a modern combined-arms navy with operational reach. This article is an effort to shift the focus from particular “champions” to the process that the senior officers went through, which was one of integrating technology, tactics, and human beings to form a new organization.

This process was messy, and those engaged in it were often critical of one another’s views (and sometimes bitterly so of each other’s motives). But they kept at it, and the growing maturity of the fleet that they were creating is evident from its written records. But the story of that growing maturity has, in my opinion, been obscured by a mythology that portrays the rise of the combined force as in fact the rise of a carrier force. Today’s officers do not really know where the Navy they command came from. The evidence of where that Navy came from exists, it is true, but it is obscured by a mythology continued in books, articles, and films. This is unfortunate, to say the least, and this article has been an attempt to move

away from that mythology and toward useful insights into the development of the modern U.S. Navy.

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#### NOTES

1. Trent Hone, "U.S. Navy Surface Battle Doctrine and Victory in the Pacific," *Naval War College Review* 62, no. 1 (Winter 2009), p. 67. It was this article that prompted the author to write his own.
2. In a letter (2 July 2011) to the author, Frank Uhlig, Jr., points out that the present article says little about submarines, especially their contribution as scouts in major carrier battles in the Pacific in World War II and the need for submarine officers to rethink their offensive doctrine. It is an excellent point. If any arm of the Navy went through a transformation in World War II, it was the submarine force.
3. Capt. R. K. Turner, "The Strategic Employment of the Fleet," staff presentation, Naval War College, 28 October 1937, p. 6, box 5, Record Group [hereafter RG] 14, Naval War College Naval Historical Collection, Newport, R.I.
4. *Ibid.*, p. 19.
5. Capt. R. K. Turner, "The Employment of Aviation in Naval Warfare," September 1937, pp. 6, 12, box 5, RG 14, Naval War College Naval Historical Collection.
6. *Ibid.*, p. 41.
7. *Ibid.*, p. 42.
8. Albert A. Nofi, *To Train the Fleet for War: The U.S. Navy Fleet Problems, 1923–1940* (Newport, R.I.: Naval War College Press, 2010).
9. See Thomas C. Hone, Norman Friedman, and Mark D. Mandeles, *American & British Aircraft Carrier Development, 1919–1941* (Annapolis, Md.: Naval Institute Press, 1999).
10. Commander Aircraft, Battle Force, "Operations with Carriers," April 1939, p. 3, box 110, entry 337, "USN and Related Operational, Tactical and Instructional Publications," RG 38, National Archives, Washington, D.C.
11. *Ibid.*, p. 11.
12. See Wayne P. Hughes, Jr., *Fleet Tactics* (Annapolis, Md.: Naval Institute Press, 1986), chap. 4.
13. U.S. Navy Dept., *War Instructions, U.S. Navy*, FTP 143 (Washington, D.C.: repr. 1942), p. 42, box 46, entry 336-A, "USN Technical Publications," RG 38, National Archives [emphasis original].
14. *The Battle of the Coral Sea, Strategic and Tactical Analysis*, NAVPERS 91050 (Newport, R.I.: Naval War College, 1947); *The Battle of Midway, including the Aleutian Phase, Strategic and Tactical Analysis*, NAVPERS 91067 (Newport, R.I.: Naval War College, 1948). As the Coral Sea analysis noted, "the basis of the Allied plan was a pure raiding operation." The Midway analysis noted that the experience of both prewar exercises and wartime operations had shown the value of getting in the first attack.
15. Clark G. Reynolds, "The U.S. Fleet-in-Being Strategy of 1942," *Journal of Military History* 58, no. 1 (January 1994).
16. *Ibid.*
17. John B. Lundstrom, *Black Shoe Carrier Admiral: Frank Jack Fletcher at Coral Sea, Midway, and Guadalcanal* (Annapolis, Md.: Naval Institute Press, 2006), p. 497.
18. *Ibid.*
19. Vice Adm. Frederick C. Sherman, "World War II Diary," p. 7, Command File, World War II, Individual Personnel, box 98, Naval History and Heritage Command, Washington, D.C. [hereafter NHHC].
20. *Ibid.*, p. 9.
21. *Ibid.*, p. 12.
22. *Ibid.*, p. 15.
23. Lt. Andrew R. Hilen, Jr., USNR, "Remarks on the Development of the Fast Carrier Task Force," part 1 of Deputy Chief of Naval Operations (Air) Historical Unit, *Essays in*

- the History of Naval Air Operations*, vol. 1, *Carrier Warfare* (Washington, D.C.: October 1945), p. 7. The quotation by Captain Davis is from Commander in Chief, U.S. Fleet, *Secret Information Bulletin No. 2*, p. 12-27; both Navy Department Library, NHHC.
24. Hilen, "Remarks on the Development of the Fast Carrier Task Force," p. 8.
  25. *Ibid.*, p. 9.
  26. *Ibid.*
  27. Lundstrom, *Black Shoe Carrier Admiral*, p. 498.
  28. Sherman, "World War II Diary," pp. 21, 29.
  29. Lundstrom, *Black Shoe Carrier Admiral*, p. 498.
  30. *Ibid.*
  31. Pacific Fleet Confidential Letter ICL-43, "Standard Cruising Instructions for Carrier Task Forces, U.S. Pacific Fleet," p. 4, CincPac File, Pac-13-cfm, A2-11/A16-3 (P), box 4679, entry 107, "CINCPACFLT Confidential and Secret Correspondence Files," RG 313, National Archives [emphasis original].
  32. *Ibid.*, p. 8.
  33. Commander Task Force Fourteen, letter to Commander-in-Chief, United States Pacific Fleet, subject "Maneuvering and Fire Doctrine for Carrier Task Forces," 22 April 1943, p. 4, A16-3, box 99, serial 051, RG 38, National Archives.
  34. United States Fleet, Headquarters of the Commander-in-Chief, *Solomon Islands Actions, August and September 1942*, Battle Experience Bulletin No. 2, 1 March 1943, p. 13-22, Navy Department Library, NHHC.
  35. United States Fleet, Headquarters of the Commander-in-Chief, *Solomon Islands Actions, October 1942*, Battle Experience Bulletin No. 3, 15 March 1943, p. 21-6.
  36. *Ibid.*, p. 21-10.
  37. *Ibid.*
  38. *Ibid.*, p. 21-12.
  39. *Ibid.*, pp. 21-38, 21-39 [emphasis original].
  40. Lundstrom, *Black Shoe Carrier Admiral*, p. 498. Also see Clark G. Reynolds, *The Fast Carriers* (New York, N.Y.: McGraw-Hill, 1968), pp. 54-55. For more details on the new technology, see Hilen, "Remarks on the Development of the Fast Carrier Task Force," p. 15. For the beginnings of the CIC, see Commanding Officer, report to the Commander in Chief, United States Fleet, via the Commander, South Pacific Force and the Commander in Chief, subject "Use of Type SG Radar during Night Action," 19 November 1942, p. 1, in World War Two Action and Operational Reports, *U.S.S. Fletcher*, box 984, serial (S)-2, RG 38, National Archives.
  41. Pacific Fleet Board, letter to Commander in Chief, United States Pacific Fleet, subject "Revision of Pacific Fleet Cruising Instructions," 18 May 1943, A16-3/P/A17, World War 2 Plans, Orders and Related Documents, box 22, RG 38, National Archives.
  42. Commander in Chief, U.S. Pacific Fleet, *Current Tactical Orders and Doctrine U.S. Pacific Fleet*, PAC-10 (n.p.: June 1943), change 3, p. v, box 22, RG 38, National Archives.
  43. *Ibid.*, p. I-3.
  44. *Ibid.*, p. IV-3 (part IV contained the "Fighting Instructions").
  45. *Ibid.*, p. IV-5.
  46. *Ibid.*, p. VI-4.
  47. Hone, "U.S. Navy Surface Battle Doctrine and Victory in the Pacific," p. 76.
  48. Thomas B. Buell, *The Quiet Warrior* (Annapolis, Md.: Naval Institute Press, 1987), p. 201.
  49. United States Fleet, Headquarters of the Commander-in-Chief, *Bombardment of Wake Island, 5 & 6 October 1943*, Battle Experience Bulletin No. 13, 28 March 1944.
  50. *Ibid.*, pp. 63-6 through 63-9.
  51. *Ibid.*, p. 63-16.
  52. *Ibid.*, p. 63-17.
  53. *Ibid.*, pp. 63-34, 63-39, 63-42.
  54. *Ibid.*, p. 63-91.
  55. Lundstrom, *Black Shoe Carrier Admiral*, p. 499.
  56. "Salvage Diary from 1 March 1942 through 15 November 1943," entries for 23 October (*Belleau Wood*), 21 October (*Yorktown*), miscellaneous repairs to several carriers during October, *Arizona Memorial*, National Park Service, Industrial Department War Diary Collection, National Archives.

57. Buell, *Quiet Warrior*, p. 202. See also United States Fleet, Headquarters of the Commander-in-Chief, *Supporting Operations before and during the Occupation of the Gilbert Islands, November 1943*, Battle Experience Bulletin No. 15, November 1943, p. 67-8 and p. 67-9, which are excerpts from the "Assumptions" portion of the operations plan. Also Clark G. Reynolds, *Admiral John H. Towers: The Struggle for Naval Air Supremacy* (Annapolis, Md.: Naval Institute Press, 1991), p. 436.
58. Lundstrom, *Black Shoe Carrier Admiral*, p. 499.
59. Battle Experience Bulletin No. 15, p. 67-7.
60. *Ibid.*, p. 67-9.
61. *Ibid.*, p. 67-253.
62. *Ibid.*, p. 67-99.
63. *Ibid.*, p. 67-100.
64. Hone, "U.S. Navy Surface Battle Doctrine and Victory in the Pacific," p. 74.
65. United States Fleet, Headquarters of the Commander-in-Chief, *Supporting Operations for the Occupation of the Marshall Islands including the Westernmost Atoll, Eniwetok, February 1944*, Battle Experience Bulletin No. 17, 16 October 1944, p. 70-2.
66. *Ibid.*, p. 70-3.
67. *Ibid.*, p. 70-18.
68. *Ibid.*, p. 70-19.
69. *Ibid.*, p. 70-20.
70. *Ibid.*, p. 70-23.
71. Jeffrey M. Moore, *Spies for Nimitz: Joint Military Intelligence in the Pacific War* (Annapolis, Md.: Naval Institute Press, 2004), p. 15.
72. *Ibid.*, p. 22 for the flow of information, and p. 23 for the scheduling of intelligence support.
73. Fleet Adm. Ernest J. King, *U.S. Navy at War, 1941-1945: Official Reports to the Secretary of the Navy* (Washington, D.C.: U.S. Government Printing Office, 1946), "Second Report," pp. 155-57, and "Third Report," part 3. See also Thomas Wildenberg, *Gray Steel and Black Oil: Fast Tankers and Replenishment at Sea in the U.S. Navy, 1912-1995* (Annapolis, Md.: Naval Institute Press, 1996).
74. Commander Task Force Fifty-Eight, to Commander-in-Chief, U.S. Fleet, via Commander-in-Chief, U.S. Pacific Fleet, subject "CATCHPOLE and HAILSTONE Operation—Action Report of," 8 March 1944, p. 7, box 213, RG 38, National Archives. See also p. 1 of the "Task Force Air Plan," attached to the report.
75. *Ibid.*, annex C, "General Doctrines," paras. 5, 6.
76. Commander Fast Carrier Task Forces, United States Pacific Fleet, "Task Force Instructions" (FastCar TFI-1), 24 May 1944, cover letter signed by Vice Admiral Mitscher, box 113, entry 337, "USN and Related Operational, Tactical and Instructional Publications," RG 38, National Archives.
77. *Ibid.*, part 3, "Cruising Instructions," p. 2.
78. *Ibid.*, p. 3.
79. *Ibid.*, part 6, "Supporting Doctrine," p. 34.
80. Commander, Third Fleet, Operation Plan 14-44, 1 August 1944, p. 3, World War 2 Plans, Orders and Related Documents, box 57, RG 38, National Archives.
81. *Ibid.*, annex A, p. 1.
82. *Ibid.*, pp. 2-3.
83. *Ibid.*, p. 3.
84. *Ibid.*, p. 4.
85. Commander, Third Fleet, Battle Plan No. 1-44, 9 September 1944, p. 1, World War 2 Plans, Orders and Related Documents, box 57, RG 38, National Archives.
86. *Ibid.*, p. 2.
87. *Ibid.*, annex A, "Concept of the Plan," p. 2.
88. Hone, "U.S. Navy Surface Battle Doctrine and Victory in the Pacific," p. 95.