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Fort Fisher—Amphibious Victory in the American Civil War

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FORT FISHER

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Historians and military professionals tend to agree on the importance of large armies to the outcome of the American Civil War. So much attention has focused on the major battles and leaders of land warfare that other elements of military significance often receive less attention than deserved. Yet the ultimate victory of Union forces resulted from a total war effort, involving political, diplomatic, economic, military, and naval power. In no arena of conflict did the Union hold greater advantage than in its ability to assert naval force and conduct amphibious operations, and no operation in the entire Civil War better illustrates the Union's ability to leverage amphibious power projection than the assault on Fort Fisher at the mouth of the Cape Fear River. The actions taken to capture Fort Fisher and thereby close down the last effective Confederate port—Wilmington, North Carolina—represent a particularly rich opportunity to study the amphibious elements of that war.

The fighting for Fort Fisher actually involved two separate but related battles. The first attack, in December 1864, failed utterly, and it provides many good examples of bad planning and execution. The second effort, during January 1865, succeeded magnificently; it stands as a sterling example upon which to build an amphibious tradition. In the second attack, commanders learned from the mistakes of the first and applied sound principles for the conduct of complex joint operations.[1] By studying both the success and failure at Fort Fisher, it is possible to understand better the projection of combat power ashore and the evolution of joint operations within the American military system.[2]

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Other examples of the importance of amphibious assault during the Civil War exist, including joint operations on the inland rivers, on the littorals of the Gulf of Mexico, and along the Atlantic coastline.[3] The application of naval strategy and amphibious tactics constituted an integral element of President Abraham Lincoln's thinking, as he sought to maintain pressure on the Confederacy at every point.[4] The effects of this war strategy eroded Confederate strength in many areas, including the tactical power of their armies in the field. As Gen. Ulysses S. Grant and his lieutenants maneuvered against Southern armies, they faced smaller forces than they might have, because of the Confederate strategy of defending all points, including the entire coastline against a free-ranging Union navy.[5] In addition, as the Union navy closed Southern ports to blockade runners, Confederate armies lost important sources of materiel and equipment needed to sustain their war effort.[6]

At the beginning of the American Civil War, leaders understood sophisticated concepts of naval strategy, but very little doctrine or tradition regarding amphibious operations existed.[7] Between the Revolution and the Civil War, the United States had undertaken only one significant amphibious action. During the Mexican-American War, U.S. forces conducted an important joint amphibious operation under the command of Gen. Winfield Scott and Commodore David Conner. Using specially designed landing craft and tactical deception, Scott and Conner landed over ten thousand troops on beaches near Veracruz and sustained their operations ashore for fifteen months during 1847–48.[8] The Veracruz–Mexico City campaign was a masterpiece of strategy and joint service cooperation, providing a superb precedent upon which to build an amphibious program, had one been pursued.

American experience with amphibious operations during the Civil War produced mixed results up to the final action at Fort Fisher in January 1865. Grant made good use of the Navy in maneuvering his army along the Cumberland, Mississippi, and Tennessee rivers in the first two years of the war. These did not represent pure amphibious actions in the classical, blue-water sense, yet they possessed many of the attributes of amphibious warfare, including a supportive relationship between army and naval commanders. In the era before the existence of joint doctrine, nothing required greater attention than cooperation between service leaders. No one in the Civil War could do that better than Grant.[9] Unfortunately, Grant's subordinate commanders did not always prove as skillful in applying this aspect of operational art.

The capture of New Orleans by amphibious forces early in the war established an important strategic advantage for the Union. Yet despite operational success, cooperation between the naval and army elements had not been ideal. In April 1862, troops under Maj. Gen. Benjamin F. Butler arrived at New Orleans nearly one week after Flag Officer David G. Farragut initiated his naval attack on the

city. This delay allowed Confederate officials to remove almost all material and facilities of military value, including an entire armaments factory.[10] Additionally, discord developed between Butler and then-Capt. David D. Porter, commanding a flotilla of mortar craft, regarding the role of each service in tactical operations. This did not bode well for future relations between the two forceful commanders.[11] As a result, the New Orleans operation embodied both good and bad elements of amphibious warfare.

Union forces also conducted a series of amphibious operations along the Atlantic coastline early in the war. The 1862 operations of Flag Officer Louis M. Goldsborough and Brig. Gen. Ambrose Burnside on the North Carolina littorals were highly successful and enhanced the reputation of Burnside, contributing to his subsequent promotion to command the Army of the Potomac.[12] But the lack of determined Confederate defense, coupled with superior Union firepower, created mistaken ideas about the ease of conducting amphibious operations, leading to costly errors in later landings.[13]

Throughout most of the war, the U.S. Navy and Army struggled with the problems of planning, organizing, and conducting amphibious operations effectively against important enemy positions ashore. Such actions proved especially difficult when all support had to come from the sea.[14] Moving and sustaining large armies, such as George B. McClellan's on the York Peninsula in 1862 and General Butler's at Bermuda Hundred, Virginia, in 1864 contained important amphibious elements. From the perspective of power projection and sustainment, both of these operations proved highly successful, whatever failures occurred during subsequent operations ashore. But the real test of amphibious capability is a determined defense that must be engaged during or shortly after the landing, as in the case of Fort Fisher.

The importance of Fort Fisher to the Confederacy lay in the role it played in protecting the port of Wilmington, North Carolina. During the war, Wilmington proved a major irritant to the U.S. government, as a source of military supply and a base for Confederate commerce raiding.[15] Throughout much of the war, tension existed between the Union army and navy regarding what to do about Wilmington. Secretary of the Navy Gideon Wells consistently advocated a joint action against the city and its defenses, becoming more vigorous in his demands during 1864.[16] Although eventually acceding to the operation, Secretary of War Edwin M. Stanton remained indifferent to it even up to the first attack on the fort.[17] But Grant* came to realize that closing Wilmington would eliminate the

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* Promoted to lieutenant general in March 1864 and made general in chief of U.S. forces, Grant established his headquarters in the field with the Army of the Potomac, commanded by General George Meade.
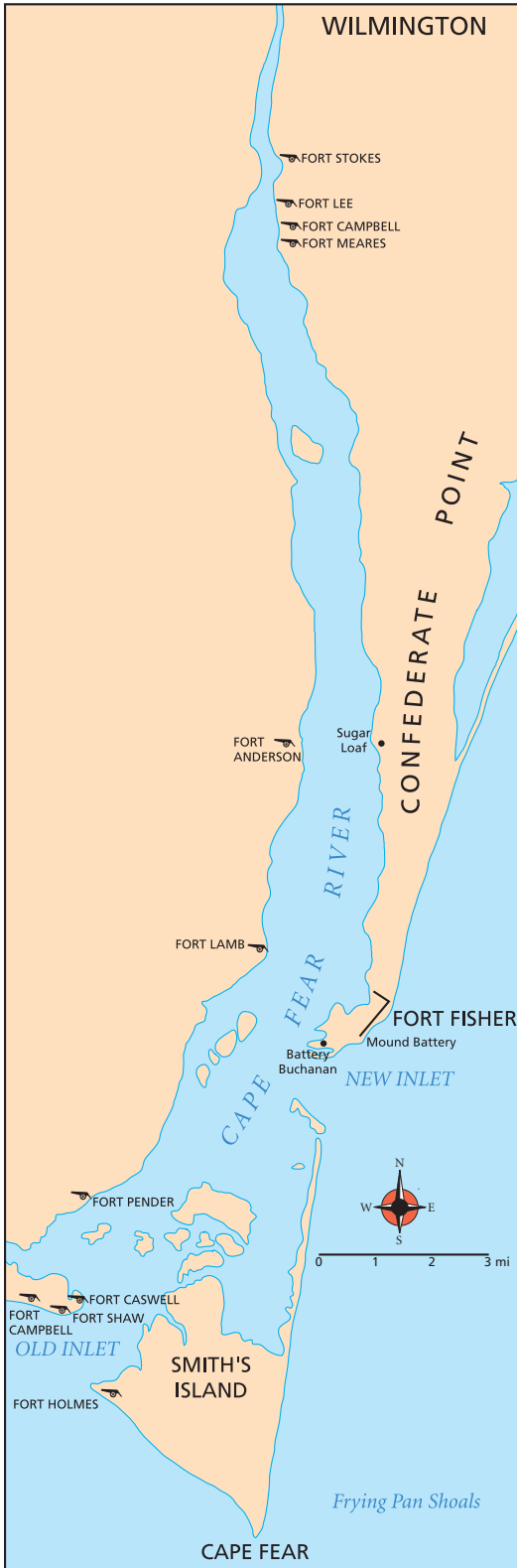
only outside source of supplies to Robert E. Lee's Army of Northern Virginia (with which the Union Army of the Potomac was in nearly constant contact after May 1864) and further isolate it on the battlefield. After the failure of the first Union effort, Grant became even more committed to the destruction of Fort Fisher and the closing of the port of Wilmington.[18]

By December 1864 only Wilmington and Charleston, South Carolina, remained open to blockade runners, as Union forces had either captured or effectively blockaded all other Confederate ports. Of the two, Wilmington proved more important, due to the difficulty it posed to blockading ships and its proximity to Lee's army.[19] Located twenty miles up the Cape Fear River, Wilmington presented a particularly difficult challenge to the Union navy. Offshore bombardment was impossible, and the hydrography of the estuary severely restricted avenues of movement for ships attempting to attack upriver.[20] Access to the Cape Fear River consisted of two inlets separated by Smith's Island and Frying Pan Shoals, which penetrated deeply out to sea. These conditions forced the blockading squadron to disburse its ships over a large sea space, thereby making it easier to penetrate.[21]

Fort Fisher served as the anchor for this powerful defensive complex, and in 1864 it represented the most advanced fortification in the world.[22] In addition to being the strongest defensive structure in the Confederacy, many considered it the strongest earthwork* ever built.[23] For over two and a half years, Fort Fisher's energetic and brilliant commander, Col. William Lamb, had labored to improve, strengthen, and expand its defenses. Working closely with his commanding officer, Maj. Gen. William Henry Chase Whiting, Lamb created a masterful defensive complex that dominated the mouth of the Cape Fear River.[24] As an observer during the Crimean War, Porter had visited formidable Fort Malakoff just after it surrendered to French and British forces. In his view, it did not compare to

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* The walls, bastions, and batteries were piled sand, contained by heavy wooden gabions and parapets.

WILMINGTON

FORT STOKES

FORT LEE
FORT CAMPBELL
FORT MEARES

CONFEDERATE POINT

FORT
ANDERSON

Sugar
Loaf

CONFEDERATE

CAPE FEAR RIVER

FORT LAMB

FORT FISHER

Mound Battery

Battery
Buchanan

NEW INLET

N
W   E
S

0   1   2   3 mi

FORT PENDER

FORT CASWELL
FORT
CAMPBELL   FORT SHAW

OLD INLET

**SMITH'S
ISLAND**

FORT HOLMES

Frying Pan Shoals

CAPE FEAR

Fort Fisher in either size (the walls were nearly four thousand feet long overall) or strength.[25] As the naval commander during the attacks on Fort Fisher, Porter may have been inclined to overstate his case somewhat, but few would deny that the fort represented a strong defensive structure.

Fort Fisher lies on a peninsula jutting south from Wilmington in what looks like an elongated and inverted pyramid. Confederate Point—or Federal Point, depending on your persuasion—lies on the lower portion of the peninsula, which terminates at New Inlet.[26] New Inlet was one of the two entrances to the Cape Fear River for deep-draft ships. The second entrance, Old Inlet, lies farther south, near Smith's Island, and is controlled by no fewer than four mutually supporting forts. Piloting through these two inlets was slow and hazardous even under the best of conditions, and the guns of the various forts could either protect or destroy any ship attempting passage.[27] Fort Fisher, only one of numerous forts defending the avenues into Wilmington, dominated all traffic through the New Inlet channel. But if Fort Fisher offered advantages of strength and location to its Confederate defenders, these very qualities also offered Union strategists an operational center of gravity for taking Cape Fear and closing the port of Wilmington.[28] By neutralizing Fort Fisher, Union forces could control the entire region.

The design of the fort reflected the tactical and engineering skills of Whiting and Lamb. Fort Fisher lies on Confederate Point like a great numeral *7,* with the horizontal top line stretching roughly west-east about a thousand feet across the peninsula, and the longer vertical stem extending roughly north and south, parallel to the coastline for some three thousand feet.

The horizontal, east-west portion faced north and protected the fort from land attack down the peninsula. Any force large enough to threaten the fortress had to deploy to the north and assault that rampart, a formidable defensive challenge to Union commanders.[29] A direct assault against the ocean-facing wall offered small prospect of success, given the weapons and equipment available to attacking forces of that era. An attack from the rear would first require passage through New Inlet, an unlikely avenue since the fort's guns would destroy the shipping before a landing force could get ashore.[30]

In early December 1864, Grant decided, in conjunction with naval leaders in Washington, to send a joint expedition to attack and capture Fort Fisher.[31] He assigned Maj. Gen. Godfrey Weitzel to lead the assault force but issued his orders through Butler, who commanded the Department of Virginia and North Carolina, as well as the Army of the James.[32] Exercising command discretion, Butler chose to join the expedition off the coast of Fort Fisher and personally take charge of the operation.[33] Porter commanded the North Atlantic Blockading Squadron with responsibility for actions at sea and against the Confederate littoral.[34] The overall plan of attack agreed on by Grant and Porter involved moving 6,500 soldiers from Bermuda Hundred* to a rendezvous point off the North Carolina coast within striking distance of Fort Fisher. The force would wait in readiness until Porter exploded a powder boat near the fort and conducted extensive naval bombardment to destroy the fort's guns and defensive structures. When the defenders appeared sufficiently weakened, the landing force would go ashore and assault Fort Fisher from the north.[35]

The concept of operations seems sound, but the detailed planning proved utterly deficient. For example, the detonation of the powder boat, naval "preparatory fires" (in modern parlance), and the infantry assault required synchronized timing and fluid execution, creating shock for the defenders and momentum in the offensive.[36] Instead, the efforts occurred disjointedly and spasmodically, allowing the defenders to concentrate their full attention on each in turn. The powder boat detonated at approximately two o'clock on the morning of 24 December, with absolutely no effect on the troops, defenses, or subsequent battle.[37] Throughout the 24th Porter's fleet conducted a slow bombardment of Fort Fisher, inflicting only minor damage on its structure and guns. The defenders themselves suffered very few casualties under this fire, moving into protective "bombproofs" whenever they could not serve their own guns to good effect.[38]

On Sunday, 25 December, while Porter continued his naval gunfire, a landing force of some three thousand men went ashore about three miles north of the

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* Butler's army, assigned in the 1864 campaign to threaten Richmond from the south, had been blocked since May in the Bermuda Hundred, a bight of land enclosed by a loop of the James River about twenty miles south of the city.

fort, out of range of its guns.[39] Weitzel pushed down the peninsula, capturing several small outposts along the way and scouting the approaches to the fort. In an act of courage and bravado, Lt. William H. Walling of the 142nd New York Infantry Regiment actually ascended the fort's parapet and brought back a Confederate flag knocked down by naval gunfire.[40] After the fact, Weitzel and Grant made much of the incident, along with the capture of a dispatch rider, but none of this had real military significance.[41] Weitzel halted and deployed his main force about eight hundred yards from the base of Fort Fisher to evaluate the situation.[42] An advance force of about five hundred skirmishers had already probed the fort's north-facing defenses, with unsatisfactory results;[43] the Confederate defenders had repulsed the Union line with canister and musket fire from strong positions, inducing anxiety in Weitzel's mind.[44]

In fact, what Weitzel now observed from his reconnaissance of the fort appalled him and caused him to question the prospect of success. Whatever his later tendency to overstate his minor accomplishments at the outposts and to understate his skirmishers' repulse, Weitzel at the time saw Fort Fisher's north wall as very formidable.[45] Attacking it may have been the only viable option, but that did not make the task any more palatable. The assault force had first to overcome an electrically detonated minefield and then an infantry line behind the log-and-earthen palisade, and finally storm a twenty-three-foot rampart holding twenty-four guns and mortars firing shot, shell, grape, and canister.[46] The wall terminated on the west at a slough covered by field artillery, and on the east at the formidable Northeast Bastion, which mounted two eight-inch guns.[47] Weitzel also noted that despite its apparent accuracy, the naval gunfire during the day had done little damage to the guns or structure of the fort.[48]

Thoughts came to Weitzel's mind of Fort Jackson (south of New Orleans in April 1862), Vicksburg (on the Mississippi, besieged May–June 1863), and Charleston (July 1863), where heavy bombardments had failed to destroy enemy defenses. His recollection of two bloody and failed assaults of 10 July 1863 on Battery Wagner in Charleston Harbor, "which were made under four times more favorable circumstances than those under which we were placed," also weighed heavily upon him.[49] Weitzel took a boat out to the army transport *Chamberlain* to meet with Butler and discuss the situation. He reported that in his opinion—and that of his senior officers—an assault under the present circumstances would be "butchery."[50] Butler concurred, conjuring up from Weitzel's vivid description of conditions his own thoughts of Battery Wagner, as well as Port Hudson, Louisiana, on the Mississippi (May–July 1863).[51] After further consideration, Butler ordered the landing force to disengage and reembark.[52]

Porter did not agree with the decision to call off the assault on Fort Fisher and urged Butler to reconsider. He explained that his ships had been bombarding at

only a slow rate of fire; rapid firing, he was confident, would suppress the fort's defenders until the assault force reached to within twenty yards of the ramparts. He further informed Butler that he had dispatched his largest vessels to Beaufort, North Carolina, to replenish their ammunition in order to provide sustained support should Butler and Weitzel resume the attack.[53] Whether because of personal animosity or professional distrust, Butler appears not to have placed any confidence in Porter's commitment. By 27 December all troops had left the beach, and by 28 December most had returned to their bases.[54]

Grant too disagreed with Butler's decision. On the 28th, after receiving a preliminary report, Grant telegraphed President Lincoln that the expedition had "proven to be a gross and culpable failure."[55] "Culpable" was the operative word. On 7 January 1865, Grant forwarded Butler's after-action report to Stanton, stating in his endorsement that he had never intended for Butler to accompany the expedition and that his orders "contemplated no withdrawal, or no failure after a landing was made."[56] It is clear that Grant believed Butler had disregarded his orders and had to assume responsibility for the failure at Fort Fisher. It is also clear that Grant's objection concerned primarily the withdrawal of the troops from the beach rather than the decision not to attack.[57] Grant believed that simply establishing the landing force ashore would have constituted success, because a subsequent siege would have been sufficient to guarantee ultimate victory.[58] Weitzel had recommended against launching an assault on the fort, but did not become associated with the decision to evacuate the beachhead. Because of this and his prestige within the Army, he escaped the full force of Grant's wrath. Yet Weitzel had missed his opportunity to excel and would have no role in future operations against Fort Fisher.

Even the three thousand men Butler and Weitzel had landed, of their 6,500 available, represented a strong and threatening presence ashore.[59] Fort Fisher's garrison consisted only of roughly one thousand men, including infantrymen, gunners, and engineers, both regular and reserve.[60] The formidableness of the defenses would give pause to any prudent commander, but did not—as Grant pointed out—dictate evacuation of the beachhead.[61] Nor did—as Butler later contended, and Porter emphatically denied—developing weather conditions require evacuation.[62] What better explains Butler's decision to withdraw his force was the arrival of Maj. Gen. Robert F. Hoke's division, dispatched from the Army of Northern Virginia by Lee.[63]

As Weitzel's troops came ashore near Fort Fisher, the advance elements of Hoke's division had passed through Wilmington and deployed to a position known as Sugar Loaf, six miles north of the fort. Commanded by Brig. Gen. William Kirkland, the Confederates engaged the lead brigade of the Union amphibious force, under Brig. Gen. Newton Martin Curtis. Seeing himself outnumbered and

not certain when the rest of the division would arrive, Kirkland pulled back. As Weitzel and Curtis began moving their troops south, Kirkland established a cross-peninsula line north of the landing site and awaited reinforcements. Weitzel had no idea of Kirkland's strength, but interrogation of prisoners caused him to inflate it in his mind.[64] Undoubtedly, this later weighed on his mind as he observed the awesome defenses of Fort Fisher's north wall.

In fact, the Confederates were weak both south and north of Weitzel. Braxton Bragg, the new commander of the Department of North Carolina, had pulled forces out of the Wilmington–Cape Fear area, including garrison troops from Fort Fisher. Whiting and Lamb had become alarmed, considering the fort dangerously undermanned. They also deplored Bragg's lack of urgency about the situation, which caused them to distrust his competence.[65] The weaknesses of the Wilmington area had prompted Lee to send Hoke's division to stiffen its defenses. Whiting and Lamb considered these reinforcements essential to the defense of their position.[66] Despite Kirkland's timely arrival, the bulk of Hoke's division did not arrive until after Weitzel and Butler had evacuated their lodgment ashore, due to conflicting railroad priorities.[67]

Union commanders did not appreciate their advantageous position on 25 December 1864, when they decided to end the operation.[68] Similarly, neither Kirkland nor Bragg realized the vulnerability of Weitzel's force once it began to withdraw. Whiting later severely criticized Bragg's failure to send Kirkland against Weitzel's constricting beachhead on the 26th. To Whiting and Lamb, the most important lesson from the December attack on Fort Fisher was the need to coordinate a total military effort throughout the Wilmington–Cape Fear area. Unfortunately for the South, Braxton Bragg appears to have been insensitive to the military situation and its impact on Fort Fisher.[69] In fact, Whiting believed, Bragg demonstrated incompetence throughout both battles for Fort Fisher and deserved the utmost censure.[70] Nonetheless, Confederate forces believed they had won a victory. In the words of Lamb, on "December 27, the foiled and frightened enemy left our shores."[71]

The Union forces did not believe they had been defeated, but they could hardly deny that they had failed. Joint planning existed only on a superfluous level and independent action became commonplace during execution, demonstrating the lack of coordination between the army and navy. Additionally, it is fair to state that Butler and Weitzel exhibited tentativeness, if not outright timidity. Of course, they had no way of knowing the true strength of the fort's garrison or of the troops to their north, but Hoke's entire division was no larger than their own force.[72] The fire support available from Porter's guns would have been superior to anything Hoke could have brought to bear.

Both Porter and Grant contended that the attack lacked vigor and commitment. But Porter's support of Butler and Weitzel had been erratic as well. Certainly he demonstrated the professional capability of his naval force even if the slow rate of fire had not caused much damage to the defenses of Fort Fisher.[73] Yet Porter's cooperation with the army in the explosion of the powder boat and the pre-invasion bombardment had been abysmal.[74] Porter had not only exploded the powder boat too early and without notifying army leaders but failed to establish any means of communicating with forces ashore to direct or evaluate the effectiveness of his gunnery. Additionally, his detailed planning with respect to ammunition and fuel proved deficient. Butler also lacked a logistics plan to support his troops ashore.[75] In general, both commanders failed to integrate their efforts. They acted like separate commanders, merely informing each other of their actions, rather than as a cohesive and synergetic team.

Grant's disappointment in the operation was considerable, but his reaction appears somewhat disingenuous. Although he contended that he had "contemplated no withdrawal or no failure after a landing was made," his initiating order to Butler had been ambiguous in that respect.[76] It clearly stated the objectives but concluded, "Should the troops under General Weitzel fail to effect a landing at, or near Fort Fisher they will be returned to the army operating against Richmond without delay."[77] No doubt this sentence led Butler to believe he had discretion to withdraw—since Weitzel never landed more than half of his troops, he could rationalize that the landing had never been effected.

The best outcome for the Union of the first attack against Fort Fisher was that leaders learned from its failure.[78] Despite their efforts to make Butler the scapegoat, both Grant and Porter realized that their own leadership could stand improvement. Porter and Butler had held several meetings but had conducted no real joint planning and had not communicated on an effective level.[79] Grant had left a certain ambiguity regarding his intentions and expectations.[80] Generals like William T. Sherman or Philip H. Sheridan would probably have discerned Grant's intention better than did Butler or Weitzel. But in any case, Union leaders would avoid similar errors in the second attempt. Grant would make his expectations perfectly clear to everyone and would require most emphatically close coordination between the Army and Navy.[81]

The final lesson from the Fort Fisher failure involved the problem of "operational security." The intention to capture Fort Fisher and close Wilmington in December 1864 had been general knowledge in both armies.[82] Even worse, Confederate spies at Hampton Roads had reported specific intelligence about ship and troop movements to Lee, permitting him to send Hoke's division to interpose.[83] Grant did not intend to permit such compromises in the second attempt, in January 1865. Even his new commander, Maj. Gen. Alfred H. Terry, for instance, had

to wait until he put to sea to open the orders explaining his mission and destination.[84] Rightly perceiving that disinformation could help even more, Grant let the suggestion leak that Terry and his force were to join Sherman's army in Savannah, thus providing a plausible explanation for all the naval activity.[85]

When the fleet assembled off Beaufort on 8 January, Terry met with Porter to plan the amphibious operation.[86] For the second Fort Fisher mission Porter embraced a more cooperative approach at the outset, because he trusted Grant and had confidence in the new army commander.[87] Terry and Porter developed a strong working relationship, which created the synergy so lacking in the first expedition.[88] After the planning sessions the force proceeded through heavy weather toward Cape Fear, arriving off Confederate Point after dark on 12 January, too late to attempt a landing.[89] At eight o'clock the next morning Porter's ships began a bombardment of Fort Fisher, and landing operations commenced about 8:30. By two that afternoon Porter and Terry had landed eight thousand men with twelve days' provisions and all their equipment, again north of the fort.[90]

Terry's advance element threw out pickets, who engaged Confederate scouts and captured a few prisoners. From these Terry learned that Hoke's division was still in the area; it had not left to oppose Sherman's army (which had just seized Savannah, Georgia, and was pushing northward), as Union intelligence had previously indicated.[91] Terry now had to concern himself with a strong force to the north as he moved south against Fort Fisher. He had planned a defensive line across the peninsula to protect his rear, but this new information added urgency to that precaution and increased the size of the force needed.[92] Finding the best place to establish the line became more difficult than expected. Darkness set in before Terry could find ideal terrain, and a lake on the planning map upon which he had intended to anchor the defensive line proved to be only a dried-up sandpit. In the end, Terry felt compelled to commit over half of his force to protect his rear.[93]

By eight o'clock the morning of 14 January, Terry had created a strong north-facing breastwork across the peninsula. His troops continued to improve this position throughout the period of the battle. Terry knew he had a secure foothold, which he made even stronger by emplacing field artillery, creating interlocking fields of fire, and establishing naval gunfire "kill zones." He then conducted a reconnaissance of the fort in conjunction with his engineer officer, Col. Cyrus Comstock, and the assault force commander, the same Brigadier General Curtis who had led it in December. What they saw led Terry to decide to take immediate and aggressive action rather than besiege the fortress.[94] That evening he returned to the flagship to meet with Porter and arrange activities for the next day.[95] Terry and Porter came to a complete understanding, by which a strong naval bombardment by all vessels of the fleet would begin in the morning

and continue until the moment of assault, which would be two-pronged, with army units on the right, attacking the western flank of the north-facing wall, and a detachment of sailors and Marines on the left, simultaneously attacking the Northeast Bastion.[96] Terry sent a signal team to Porter's flagship for communications throughout the battle.[97]

Brig. Gen. Adelbert Ames's 2nd Division—which included Curtis's 1st Brigade—and Brig. Gen. Charles J. Paine's 3rd Division, with attached artillery and engineers, had been present in December. Terry also had a brigade under Col. Joseph C. Abbott and a brigade of sailors and Marines under Lt. Cdr. Kidder Randolph Breese.[98] The naval brigade, specially created by Porter for the attack, did not formally belong to Terry's command but was made available for his use.[99] It consisted of 1,600 sailors and four hundred marines armed with cutlasses, revolvers, carbines, and Sharps rifles.[100]

At approximately nine o'clock on the morning of 15 January, most of Porter's North Atlantic Squadron began moving into position for the preparatory gunfire against Fort Fisher, the remainder supporting Terry's defensive line north of the fort. By eleven the ships opened fire initiating a furious duel with the guns of Fort Fisher.[101] The ground attack had been set for two in the afternoon, but not all of Terry's forces had reached their positions by that time. At about three, Terry signaled the fleet to shift to new targets and launched his two-pronged assault against the Confederate bastion.[102]

Furious fighting developed on both flanks over the next several hours as Terry sent in one unit after another to break through the fort's defenses.[103] Despite stiff resistance, Terry made progress on the Confederate left, due in large part to the defenders' having mistaken the naval brigade at the other end of the line for the main Union effort and concentrated their forces against it.[104] On the Union left, despite the courage of Breese's troops, confusion in the assault formation exposed it to a devastating fire from the ramparts and ultimately defeated the effort.[105] Breese would later declare that the failure of his attack resulted from organizational problems and lack of cohesiveness within his naval brigade. His force, assembled from small elements of every ship in the fleet thrown together, had no training as an integrated unit. Their first opportunity to work together came in storming the revetments of one of the strongest forts in the world.[106] But Breese had no need to apologize or rationalize, as his attack allowed Terry to establish a lodgment at the other end of the Confederate line.[107]

As Breese and his brigade struggled with devastating fire on the Union left, Terry's brigades made gradual progress on the right. Having fed in all three brigades of Ames's division, Terry sent in an additional brigade and regiment drawn from his northern defensive line.[108] Reinforced, Terry pressed the attack and entered the fort around six o'clock, although resistance continued into the

night.[109] Fearing an attack from Hoke, Terry moved Breese's spent naval brigade into the defensive line to replace the troops that he had withdrawn.[110] By ten that night, the Union army had taken Fort Fisher, having killed or captured all its defenders. Whiting and Lamb, both seriously wounded, became prisoners when the fighting finally ended at Battery Buchanan, roughly a mile south of the fort proper.[111]

By any standard, the second attack against Fort Fisher stands as a superb example of naval competence, military efficiency, combat effectiveness, and the value of joint operations. But like all great victories, the results at Fort Fisher reflect both competence in the victor and deficiencies in the defeated.

Robert Hoke's division, sent to protect Fort Fisher and keep Wilmington open, numbered six thousand effectives.[112] As we have seen, only Kirkland's lead brigade arrived during the first attack in December, and it did very little to oppose that landing, aside from the psychological pressure on Weitzel and Butler its presence created. As it turned out, however, that presence alone, coupled with the strength of Fort Fisher's north wall, proved sufficient. In January 1865, the entire division was present and available, yet it proved of little more value. The division remained in defensive positions well north of the fighting, posing a threat to Terry's force but taking no action against it. The most charitable view is that Hoke's proximity required Terry to maintain a strong defensive line in his rear, manned by over half his troops. Yet even that had no impact on the outcome of the battle. Hoke and his division were little more than spectators.

In Whiting's view, Fort Fisher fell to the Union for two principal reasons. First and most important, as has been noted, was Braxton Bragg's generalship. Whiting's second reason was the naval bombardment on 14–15 January, which he believed the most powerful of the war.[113] If Whiting thought the bombardment in December "diffused and scattered," the next one he considered ferocious and tenacious. The shelling destroyed all the guns on the north wall, swept away the palisade, and plowed the minefield, cutting most of the detonating wires. Nevertheless, Whiting claimed, the garrison could have held out if supported by Bragg. Even if not, Lamb believed that a fresh brigade could have retaken the fort immediately after it fell but had none in position.[114] In Whiting's evaluation, ultimately the defeat at Fort Fisher resulted from Bragg's failure to send in Hoke's division during the fighting.[115]

Whatever Hoke's division might have accomplished, the amphibious lessons are apparent. The most important prerequisite of amphibious success is effective integration between the naval and landing forces.[116] This element was not entirely missing in the first attack, as exhibited by the fire support on 25 December, but compared to January it was almost feeble. The army signalers aboard

Porter's flagship in January illustrates the lengths to which he and Terry went in order to coordinate. The close and continuous planning that occurred between Porter and Terry throughout the operation contrasts with the minimal communication in December. The potential existed for victory or defeat during both attacks on Fort Fisher. Synergy between the Army and Navy is an important reason why the first failed and the second succeeded.

The rapid transfer of combat power from sea to shore is another key to success in landing operations.[117] In the first attack, Butler and Weitzel were almost leisurely. They never got more than half their troops ashore, and even that fraction could not have sustained itself more than a few days. In contrast, Terry and Porter landed eight thousand troops in about five hours with all their equipment and supplies for twelve days. This illustrates the difference between a tentative effort and a determined commitment. Terry also organized his force—including the naval brigade—in such a manner as to provide his operation flexibility and fluidity.[118] His units could be reinforced tactically without creating undue vulnerability elsewhere. There is no evidence of Butler or Weitzel having given any thought to "task organization" during the first attack.

Related to integration between naval and landing forces is the concept of unity of effort, or operational coherence.[119] Simply stated, this goes beyond integration of effort to imply a unified approach at all levels, based upon a single-minded commitment to accomplishing the mission. This unity and coherence emerged in the second attack in great part due to the failure of the first. Determined not to experience another such ignominy, the secretaries of war and the Navy, Admiral Porter, and Generals Grant and Terry realized they had to produce a common, unified effort, a coherent operation. This resulted at the highest levels in a unity of effort that flowed down through all ranks and permeated the entire operation—perhaps more completely than in any other episode of the Civil War. Certainly, it stands in stark contrast to the disunity and disjointedness among the defenders. The concept of unity of effort and operational coherence appears not to have entered into the thinking of the Confederate leadership in the Wilmington–Cape Fear area.[120]

As we have seen, despite the superb example of the Veracruz landing, naval and military commanders of the American Civil War had no doctrine or specially trained officers with which to plan or execute amphibious operations. Neither did they have a systematic way to capture, analyze, or document lessons from their own experience. The lessons of Fort Fisher were not formally preserved for use during the next major conflict—the Spanish-American War of 1898. Nonetheless, it is apparent that some institutional memory survived from one war to another.[121] Of the four major landings undertaken by American forces in 1898, all proved successful, if not models of efficiency.[122] The commanders associated with

these amphibious operations—George Dewey and William T. Sampson of the Navy; Nelson A. Miles, William R. Shafter, and Wesley Merritt of the Army; and Robert W. Huntington of the Marines—all had had combat experience during the Civil War. In every case, the planners of 1898 ensured that the landings would be unopposed at the water's edge and that sufficient naval gunfire would support operations ashore.

Interestingly, the most outstanding example of interservice cooperation in both planning and support from the Spanish-American War occurred between Dewey and Merritt during complex amphibious operations in the Manila-Cavite area.[123] Dewey, who had served on the steam frigate *Colorado* under Porter during the fight for Fort Fisher, brought firsthand battle experience to the Manila-Cavite campaign. In comparison, the Daiquirí landings near Santiago, Cuba, lacking sound doctrine and officers with direct amphibious experience, appeared amateurish.[124]

Fort Fisher, Veracruz, and to a lesser extent the Spanish-American War all contributed to the U.S. amphibious tradition and historical record, in ways useful for the future. They provided twentieth-century military and naval thinkers with solid examples on which to develop their theories, doctrine, and war plans. By then a melding of military history with the diligence of professional officers ensured that the amphibious experiences of the nineteenth century, especially the example of Fort Fisher, would be available for future commanders. Today, even in a substantially changed operational environment, many of those lessons remain valid and instructive.

NOTES

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1. E. B. Potter and Chester W. Nimitz, eds., *Sea Power: A Naval History* (Englewood Cliffs, N.J.: Prentice Hall, 1960), pp. 322–25.

2. In current military terminology, the term "joint" means a military activity involving more than one service, and "combined" refers to operations involving more than one nation. Military leaders of the Civil War era used "combined" for what we now call "joint." Consequently, many historians use the term "combined" when referring to what is really a *joint* operation. See U.S. Defense Dept., *Department of Defense Dictionary of Military and Associated Terms,* Joint Publication 1-02 (Washington, D.C.: 19 September 2001), pp. 100, 277, available at www.doctrine .quantico.usmc.mil.

3. James M. McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Oxford Univ. Press, 1988), pp. 370–72.

4. Potter and Nimitz, *Sea Power,* p. 262.

5. Rear Admiral David D. Porter to Secretary of the Navy Gideon Welles, after-action report [hereafter AAR], 22 January 1865, in *Official Records of the Union and Confederate Navies of the War of the Rebellion* (Carmel: Guild Press

of Indiana, 1999, repr. Oliver Computing) [hereafter ORN], series 1, vol. 11 (S# 11); Potter and Nimitz, *Sea Power,* pp. 326–27.

6. Ulysses S. Grant, *Personal Memoirs of U.S. Grant* (New York: Charles L. Webster, 1885), p. 387; Stephen R. Wise, *Lifeline of the Confederacy: Blockade Running during the Civil War* (Columbia: Univ. of South Carolina Press, 1988), pp. 3, 6–8; Potter and Nimitz, *Sea Power,* p. 327.

7. McPherson, *Battle Cry of Freedom,* pp. 313–14.

8. J. F. C. Fuller, *Decisive Battles of the U.S.A.* (New York: Harper and Brothers, 1942), pp. 150–67; Matthew F. Steele, *American Campaigns* (Washington, D.C.: United States Infantry Association, 1943), vol. 1, pp. 105–26; Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana Univ. Press, 1973), pp. 73–76; Potter and Nimitz, *Sea Power,* p. 232.

9. U.S. Defense Dept., *Joint Doctrine for Amphibious Operations,* Joint Publication 3-02 (Washington, D.C.: 19 September 2001), pp. xi, II-1, VII-1, available at www.doctrine .quantico.usmc.mil, and *Joint Staff Officer's Guide,* AFSC Pub 1 (Norfolk, Va.: National Defense Univ., 1984), pp. 142–43.

10. Rowena Reed, *Combined Operations in the Civil War* (Annapolis, Md.: Naval Institute Press, 1979), p. 195.

11. Howard P. Nash, Jr., *A Naval History of the Civil War* (New York: A. S. Barnes, 1972), pp. 138–40.

12. David D. Porter, *The Naval History of the Civil War* (repr. Secaucus, N.J.: Castle, 1984), p. 114; McPherson, *Battle Cry of Freedom,* p. 570.

13. McPherson, *Battle Cry of Freedom,* pp. 371–73.

14. U.S. Navy Dept., *Marine Corps Operations,* Marine Corps Doctrinal Publication 1-0 (Washington, D.C.: Headquarters U.S. Marine Corps, 27 September 2001), pp. 2–8, available at www.doctrine.quantico.usmc.mil.

15. Ibid., p. 331; Grant, *Personal Memoirs,* p. 387.

16. Secretary of the Navy Gideon Welles to President Abraham Lincoln, 28 October 1864, ORN, series 1, vol. 11 (S# II).

17. Ron Gragg, *Confederate Goliath: The Battle of Fort Fisher* (New York: HarperCollins, 1991),

pp. 34–35; Reed, *Combined Operations in the Civil War,* pp. 331–32.

18. Grant, *Personal Memoirs,* p. 387; Potter and Nimitz, *Sea Power,* p. 322; Gragg, *Confederate Goliath,* p. 107.

19. Wise, *Lifeline of the Confederacy,* pp. 124, 205.

20. McPherson, *Battle Cry of Freedom,* p. 819.

21. Chris E. Fonvielle, Jr., *The Wilmington Campaign: Last Rays of Departing Hope* (Campbell, Calif.: Savas, 1997), p. 21; Nash, *Naval History of the Civil War,* p. 256; Gragg, *Confederate Goliath,* pp. 11–12; Porter, *Naval History of the Civil War,* p. 686.

22. Charles M. Robinson III, *Hurricane of Fire: The Union Assault on Fort Fisher* (Annapolis, Md.: Naval Institute Press, 1998), pp. 188–89; Nash, *Naval History of the Civil War,* p. 257; Gragg, *Confederate Goliath,* p. 12. For excellent and detailed maps of the fort and its immediate surroundings (as of the battle, and as preserved), see *Fort Fisher 1861–1865: North Carolina Historic Sites,* www.ah.dcr.state.nc.us/ sections/hs/fisher/fisher.htm, especially (in the left-hand frame) "Site Area Map" and "Map of Fort Fisher."

23. Reed, *Combined Operations in the Civil War,* pp. 336; Gragg, *Confederate Goliath,* pp. 18–20; Potter and Nimitz, *Sea Power,* p. 322; Porter, *Naval History of the Civil War,* p. 694.

24. Gragg, *Confederate Goliath,* pp. 17–26; Robinson, *Hurricane of Fire,* pp. 32–40.

25. Porter to Welles, report, 16 January 1865, ORN, series 1, vol. 1 (S# 11).

26. Reed, *Combined Operations in the Civil War,* p. 336; Nash, *Naval History of the Civil War,* p. 257.

27. Porter, *Naval History of the Civil War,* p. 694; Nash, *Naval History of the Civil War,* pp. 256–57.

28. Carl von Clausewitz, *On War* (Princeton, N.J.: Princeton Univ. Press, 1976), pp. 485–87; Porter to Welles, 27 December 1864, ORN, series 1, vol. 11 (S# 11).

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31. Grant, *Personal Memoirs,* p. 388.

32. Ibid.

33. Richard S. West, Jr., *Lincoln's Scapegoat General: A Life of Benjamin F. Butler, 1818–1893* (Boston: Houghton Mifflin, 1965), p. 280; Grant, *Personal Memoirs,* p. 390.

34. David D. Porter, General Order No. 70, 10 December 1864, ORN, series 1, vol. 11 (S# 11).

35. Benjamin F. Butler to Ulysses S. Grant, AAR, 3 January 1864, OR, series 1, vol. XLII/1 (S# 87); Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. 11 (S# 11); Grant, *Personal Memoirs,* p. 390.

36. Joint Publication 3-02, pp. I-1 to II-1, XV-1 to XV-4.

37. Grant, *Personal Memoirs,* p. 391; Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. 11 (S# 11).

38. Grant, *Personal Memoirs,* p. 393; Butler to Grant, AAR, 3 January 1865, OR, series 1, vol. XLII/1 (S# 87); Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. 11 (S# 11); Col. William Lamb to Maj. James H. Hill, Chief of Staff, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87).

39. Maj. Gen. Godfrey Weitzel to Brig. Gen. J. W. Turner, Chief of Staff, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87).

40. Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87); Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. 11 (S# 11); Fonvielle, *Wilmington Campaign,* pp. 155–57.

41. Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87); Grant, *Personal Memoirs,* p. 393.

42. Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87).

43. Maj. Gen. W. H. C. Whiting to Lt. Col. A. Anderson, adjutant, cover letter to Lamb's AAR, 31 December 1864, ORN, series 1, vol. 11 (S# 11); Lamb to Hill, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87); Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87).

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45. Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87).

46. Grant, *Personal Memoirs,* pp. 391–92.

47. Ibid.

48. Ibid.

49. Weitzel to Turner, AAR, 31 December 1864, OR, Series 1, Vol. XLII/1 (S# 87). For Charleston and Battery Wagner, see Robert J. Schneller, Jr., "A Littoral Frustration: The Union Navy and the Siege of Charleston, 1863–1865," *Naval War College Review* 49, no. 1 (Winter 1996), pp. 38–60, esp. 47.

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51. Butler to Grant, AAR, 3 January 1864, OR, series 1, vol. XLII/1 (S# 87).

52. Ibid.

53. Porter to Butler, 26 December 1864, ORN, series 1, vol. 11 (S# 11); Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. 11 (S# 11); Porter to Welles, 27 December 1864, ORN, series 1, vol. 11 (S# 11).

54. Lamb to Hill, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87); Grant, *Personal Memoirs,* pp. 391–96.

55. Grant, *Personal Memoirs,* p. 395.

56. Grant to Secretary of War Edwin Stanton, endorsement on Butler's AAR, 7 January 1864, OR, series 1, vol. XLII/1 (S# 87).

57. Grant, *Personal Memoirs,* p. 394; Horace Porter, *Campaigning with Grant* (New York: Bonanza Books, 1897), pp. 362–63.

58. Grant, *Personal Memoirs,* p. 394; Porter, *Campaigning with Grant,* p. 363.

59. Porter to Welles, AAR, 26 December 1864, ORN, series 1, vol. II (S# 11).

60. Lamb to Hill, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87).

61. Grant, *Personal Memoirs,* pp. 394–95.

62. Porter to Welles, 22 January 1865, ORN, series 1, vol. 11 (S# 11).

63. Ibid.; Grant, *Personal Memoirs,* p. 392; West, *Lincoln's Scapegoat General,* pp. 289–90.

64. Weitzel to Turner, AAR, 31 December 1864, OR, series 1, vol. XLII/1 (S# 87).

65. Gragg, *Confederate Goliath,* p. 59.

66. Whiting to Anderson, cover letter forwarding Lamb's AAR, 31 December 1864, ORN, series 1, vol. 11 (S# 11); Gragg, *Confederate Goliath,* p. 61.

67. Whiting to Anderson, cover letter.

68. Porter to Welles, 22 January 1864, ORN, series 1, vol. 11 (S# 11); Butler to Grant, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87).

69. Whiting to Lee, AAR, 18 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

70. Whiting to Butler, 22 February 1865, OR, series 1, vol. XLII/1 (S# 87).

71. Lamb to Hill, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87).

72. Grant, *Personal Memoirs,* p. 392; West, *Lincoln's Scapegoat General,* p. 282.

73. Lamb to Hill, AAR, 27 December 1864, OR, series 1, vol. XLII/1 (S# 87).

74. Porter to Welles, 22 January 1865, ORN, series 1, vol. 11 (S# 11).

75. Reed, *Combined Operations in the Civil War,* pp. 252–53.

76. Grant to Stanton, cover letter forwarding Butler's AAR, 7 January 1865, OR, series 1, vol. XLII/1 (S# 87).

77. Grant to Butler, 6 December 1864, OR series 1, vol. XLII/1 (S#87).

78. Reed, *Combined Operations in the Civil War,* p. 354.

79. Ibid., pp. 347–48.

80. Grant to Butler, 6 December 1864, OR, series 1, vol. XLII/1 (S# 87).

81. Grant, *Personal Memoirs,* p. 396.

82. Robinson, *Hurricane of Fire,* p. 147.

83. Douglas Southall Freeman, *Lee's Lieutenants: A Study in Command,* vol. 3, *Gettysburg to Appomattox* (New York: Charles Scribner's Sons, 1944), pp. 617–18; Porter, *Campaigning with Grant,* p. 367; Gragg, *Confederate Goliath,* p. 60.

84. Grant, *Personal Memoirs,* p. 396; Maj. Gen. Alfred H. Terry to Brig. Gen. John A. Rawlins, Chief of Staff, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

85. Robinson, *Hurricane of Fire,* p. 147.

86. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95); Porter to Welles, AAR, 17 January 1865, ORN, series 1, vol. 11 (S# 11); Grant, *Personal Memoirs,* p. 396.

87. Grant, *Personal Memoirs,* p. 395.

88. Porter to Grant letter, 14 January 1865, ORN, series 1, vol. 11 (S# 11); Porter to Welles, 14 January 1865, ORN, series 1, vol. 11 (S# 11); Porter to Welles, report, 15 January 1865, ORN, series 1, vol. 11 (S# 11).

89. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95); Porter to Welles, AAR, 17 January 1865, ORN, series 1, vol. 11 (S# 11).

90. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95); Porter to Welles, AAR, 17 January 1865, ORN, series 1, vol. 11 (S# 11).

91. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95); Gragg, *Confederate Goliath,* p. 118.

92. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

93. Ibid.

94. Ibid.

95. Porter to Welles, AAR, 17 January 1865, ORN, series 1, vol. 11 (S# 11).

96. Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

97. Porter to Welles, AAR, 17 January 1865.

98. Porter, Landing Order, 15 January 1865, ORN, series 1, vol. 11 (S# 11).

99. "Organization of U.S. Forces, commanded by Major General Alfred H. Terry, at Fort Fisher, N.C., January 13–14, 1865," OR, series 1, vol. XLVI/1 (S# 95); Gragg, *Confederate Goliath,* pp. 275–77; Robinson, *Hurricane of Fire,* pp. 199–202.

100. Lt. Cdr. K. Randolph Breese to Porter, AAR, 16 January 1865, ORN, series 1, vol. 11 (S# 11); Porter to Welles, AAR, 17 January ORN, series 1, vol. 11 (S# 11).

101. Porter to Welles, AAR, 17 January 1865; Terry to Rawlins, AAR, 25 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

102. Porter to Welles, AAR, 17 January 1865; Terry to Rawlins, AAR, 25 January 1865.

103. Terry to Rawlins, AAR, 25 January 1865.

104. Whiting to Lee, 18 January 1865, OR; Porter to Welles, AAR, 17 January 1866.

105. Breese to Porter, AAR, 16 January 1865, ORN, series 1, vol. 11 (S# 11); Whiting to Lee, 18 January 1965.

106. Breese to Porter, AAR, 16 January 1864; Whiting to Lee, report, 18 January 1965.

107. Terry to Rawlins, AAR, 25 January 1865.

108. Ibid.

109. Terry to Rawlins, AAR, 25 January 1865; Whiting to Lee, 18 January 1865.

110. Breese to Porter, AAR, 16 January 1865; Terry to Rawlins, AAR, 25 January 1865.

111. Whiting to Lee, 18 January 1865; Terry to Rawlins, AAR, 25 January 1865.

112. Robinson, *Hurricane of Fire,* pp. 116, 150.

113. Whiting to Lee, 18 January 1865 and 19 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

114. Brig. Gen. A. H. Colquitt to Lt. Col. Archer Anderson, Assistant Adjutant General of the Army of Northern Virginia, 17 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

115. Whiting to Lee, 18 January 1865 and 19 January 1865, OR, series 1, vol. XLVI/1 (S# 95).

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118. Ibid.

119. Ibid, pp. I-5 to I-6.

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